

GEAR GUIDE 50 TOP PICKS

MOTORCYCLE MADNESS p. 196



RADIO CONTROL

car action

**BIG! FAST!
TOUGH!**

ASSOCIATED'S **NEW**
MONSTER GT 4.60 SE

FIRST TEST

We drive Kyosho's
ultimate Inferno

HOW TO

MAKE YOUR OWN
MONSTER TIRES

8 WAYS TO TRICK
OUT YOUR PIT BOX

NEW TECH

**MOD MOTOR
SHOOTOUT**

SHAFT SHOWDOWN

Factory Team TC4 &
Hara Pro 4 go head to head

Orion **vs.** Epic
vs. Checkpoint
Who wins? p. 126

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DECEMBER 2005

12>

RADIO CONTROL car action

VOLUME 20 ■ NUMBER 12 ■ DECEMBER 2005

C O N T E N T S

FEATURES

112 **ULTIMATE TEST KYOSHO INFERNO MP777 SPECIAL 2**

The Inferno gets even hotter as Kyosho pours on the gas with a longer, leaner triple-seven.

>> KEVIN HETMANSKI

126 **HIGH-TECH MOD MOTOR SHOOTOUT**

Epic, Team Checkpoint and Team Orion square off to see who's got the top mod.

>> BY MATT HIGGINS

148 **HEAD 2 HEAD ASSOCIATED FACTORY TEAM TC4 VS. HPI PRO 4 HARA EDITION**

The latest race-winning shaft cars in a side-by-side showdown.

>> BY MATT HIGGINS & PAUL ONORATO

164 **GOTTA GET GUIDE**

50 favorites from this season and the year ahead.

>> BY THE RC CAR ACTION TEAM

196 **RAMM RC MOTORCYCLE CHAMPIONSHIP**

It's hell on wheels as the world's best RC bikers go wheel-to-wheel at KZ Raceway.

>> BY LITO REYES

228 **HOW TO MAKE CUSTOM MONSTER TRUCK TIRES**

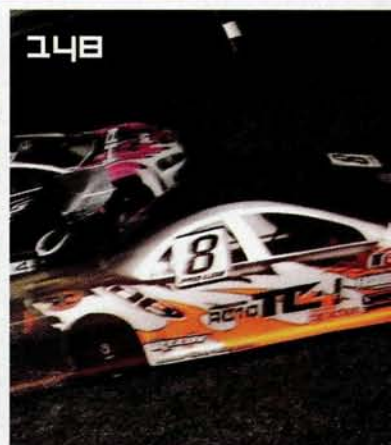
Slice and dice your way to a set of race-winning skins.

>> BY NICK SAVA

236 **HOW TO TRICK OUT YOUR PIT BOX**

Done working on your car? Time to work on your toolbox!

>> BY PETER VIEIRA



TRACK TESTS

72 ASSOCIATED MONSTER GT 4.60 SE

The A-Team goes into stealth mode and sneaks .28 power under the Monster GT's hood. It's our little secret.

>> BY PETER VIEIRA

84 CEN RACING NEMESIS

The Genesis slims down and powers up.

>> BY KEVIN HETMANSKI

96 TECHNOKIT TK10

You want carbon fiber and aluminum? You got it.

>> BY KEVIN HETMANSKI

COLUMNS

24 Starting Line >> BY PETER VIEIRA

26 Readers Write >> BY PETER VIEIRA

33 Inside Scoop >> BY PETER VIEIRA

46 Readers' Rides >> BY PAUL ONORATO

54 Pit Tips >> BY GEORGE M. GONZALEZ

62 Troubleshooting >> BY GEORGE M. GONZALEZ

187 Racer News >> BY JASON SAMS

216 Monster Shop

Project Nitro Hauler

>> BY KEVIN HETMANSKI

241 Product Watch

Image Werks/Shady Advertising Race Tent

>> BY JASON SAMS

249 Backlot >> BY JOHN HOWELL

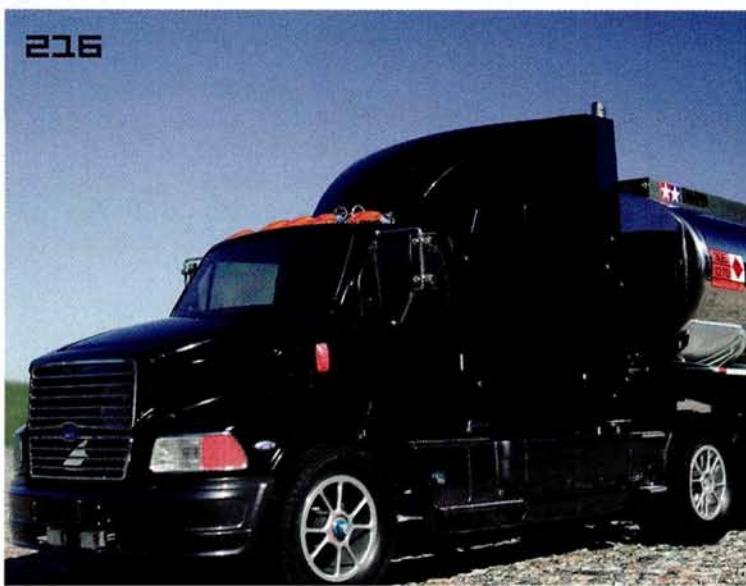
RESOURCES

243 Find it

244 RCStore.com

247 Index of Advertisers

247 Customer Service Information



The Future of Motor Technology is Here!

... and it's brushed. Shocking, isn't it? What about the great brushless-motor revolution? The pace of brushed-motor innovation doesn't seem to be slowing down (see this issue's "New-Tech Brushed Motor Blast" for proof), and the rate of brushless-motor adoption at the competition level doesn't seem to be speeding up, so the great revolution is looking more and more like a slow evolution. While the benefits of brushless tech are legion, the latest crop of brushed motors led by Orion's ground-breaking Revolution line significantly narrow the gap in performance, particularly in terms of durability. Nothing beats a complete lack of physical contact between brush and commutator, but the way the new brushed motor designs last, it's hard to justify "no-maintenance, no wear" as a reason to go brushless, especially when you factor in cost. And although that cost will certainly come down as popularity goes up, it could also be said that the popularity will go up as the cost goes down. So who's gonna blink first—the buyers (that's you) or the manufacturers? When the topic of brushless motors comes up, I often sense a concern that brushless motors are inevitable and that despite a desire to stay brushed, we're all just going to have to go brushless. Maybe, but it will only happen if there is overwhelming demand. Otherwise, as long as there are people asking for brushed motors, you'll still see new innovations and greater performance from brushed power each year. As I've said in this space many times before, the manufacturers only want to make the stuff you want to buy. Remember, you're in the driver's seat; you control the direction of radio control.



In This Issue

FACTORY TEAM TC4 VS. HPI PRO 4 HARA EDITION

Plate graphite chassis. Shaft drive. The best specs. With two cars so squarely aimed at each other (and both arriving in time for this issue), how could we resist putting them up against each other in carpet conflict?

BRUSHED MOTORS, THE NEXT GENERATION

Since Orion threw out the brushed-motor rule book with the angled, round-brush Revolution design, the motor wars have re-ignited and now burn hotter than ever. Which one is for you? To find out, we went to the dyno and beyond to see which delivers the best blend of power, convenience and durability.

CUSTOM STUFF!

This month's How-To's are all about customizing, with trick treads for your truck ("How To Build Custom Monster Tires") and an 8-step pimp-out program for your pit box ("How To Trick Out Your Pit Box").

Buh-bye,

Peter Vieira

Peter Vieira
Executive Editor

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Keepin' It Real

I'm still relatively new to RC, and I'm really having a good time with my Tamiya Subaru WRC TT-01. I want to hop it up and stuff, of course, but I also really like scale realism, so I was happy to see the totally realistic Ferrari TA05 on the cover. Why aren't there more scale cars, or at least scale bodies, for RC cars? There are so many popular cars that just don't exist in RC. [email]
Jim Danforth

I'm with you Jim; you'd think everybody would want to see current and classic dream cars in RC and that every manufacturer would offer a range to rival the depth of the static-model scene. But licensing the designs is expensive, and race bodies have simply proven to be more popular. But scale choices are out there! Try Parma and PTI, in addition to the scale topics from HPI, Tamiya, Protoform and Pro-Line.
—Pete

Think Small

I've been building and racing RC cars for about 20 years now, and I've been reading your magazine since issue number one. RC technology has come a long way, especially in the electronics field. The receivers and electronic speed controls that come with basic radio sets are half the size of those manufactured back in the '80s. Aftermarket receivers and speed controls are even smaller! With all these advances in technology in an effort to build smaller, lighter components, why are our transmitters still so big? I just bought a new radio for my Tamiya Mini Cooper, and although the servos and receiver are considerably smaller, the transmitter is just as big as those I bought 10 years ago. I would love to see a transmitter that is much smaller on top and uses fewer batteries. (The 8 AA batteries are the bulk of the weight with most radios.) Thanks for producing such a great, informative magazine. [email]
Kevin
Rosamond, CA

The Nomadio Sensor has the "small on top" styling you mention, and the Traxxas TQ system is very compact as well. Kyosho had a nearly "topless" radio with its Pulsar concept in the '80s, and the Multiplex Profi Car series has a low-profile (if not small) head design. The Multiplex and Nomadio units also use fewer batteries (6 instead



of 8). Looks like radio tech is going your way after all!
—Pete

Mid-Size Serpent

I decided to run my Serpent 950R at my local hobby shop's small racetrack. I loved how it hooked up and ran like it was on rails. Though the track was small, I did manage to shift gears on a couple of passes. I was loving it! The sight of those massive rear tires and shocks hanging out the back is a beautiful! I then had the idea to get something that was of the same order as the big 1/8 but in 1/10 scale. I looked at the Serpent 835. When I asked about the car, nobody knew that much about it. When doing research for buying it, I noticed that there are only nine bodies out there for it. Why don't that many people want to run these cars, and why are there so few bodies out there for them? [email]
Herolin

I think it's just a question of popularity. Not many guys race this class, so not many guys get excited about buying cars to race the class—not when there are scads of guys running 1/8-scale cars and many, many more running nitro touring cars. And, as you note, the 235mm class uses unusual stuff—oddly sized bodies and tires, big-block .15 engines It's just harder to be a 235mm guy. So you see less of them. It's a Darwin thing.
—Pete

Mission Accomplished

For a year, I have read every word in every issue of *RC Car Action*. I have learned so much from you guys. In fact, using what I learned, I was able to convince my parents that I know enough about nitro to have my own nitro monster truck. I owe my new Revo to you guys for helping me to convince them to let me get it. Also, with everything I have learned, I have chosen to pursue a career in RC cars. Thanks so much for all you have done. [email]
Andy L.
Columbus, OH

I can't add anything to that. Have fun with that Revo!
—Pete

WE WANT TO HEAR FROM YOU!



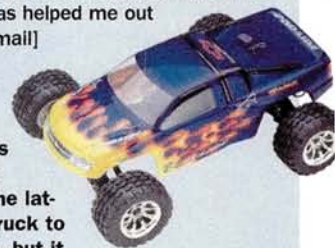
Email us at readerswrite@airage.com, or put the postman to work by mailing your letter to Readers Write, 100 East Ridge, Ridgefield CT 06877-4606 USA. Please include your city and state, and let us know if we may publish your email address. We can't reply to every letter and email, but we read 'em all!

YOU SAID IT

"You don't have to have the latest, greatest truck to be competitive"

First, great mag. I'm 15, and I finally got a real, true RC car this summer—a Traxxas Rustler. I bought it because I figured it would be a good, durable truck to learn on, even though I had the cash saved up to buy a more expensive truck. After wearing out the tires on concrete for a week, I bought a set of Pro-Lines and decided to enter a race at my local RC track. I was amazed by how well the truck did against the Team Associated and Team Losi trucks with high-dollar budgets. I have yet to finish outside the top four in the A-main (though I haven't won yet), and I attribute my performance to the practice I got before racing. I just want to let all the readers out there know that you don't have to have the latest, greatest truck out there to be competitive. It depends more on keeping it smooth and not being a hack. And thanks for all the great info in the mag. It has helped me out a great deal. [email]
Matt Stoltz

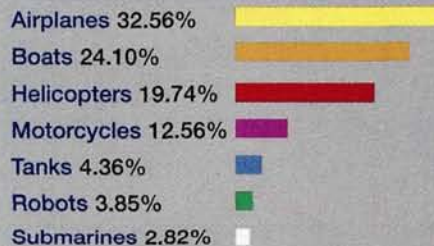
Wow, that's a great letter. It's true, you don't have to have the latest, greatest truck to be competitive, but it sure is fun to have. So, with some help from Traxxas, RPM and Pro-Line, I'm hooking you up. Every one of their Rustler upgrades is on its way to you!
—Pete



GOT A QUESTION FOR YA

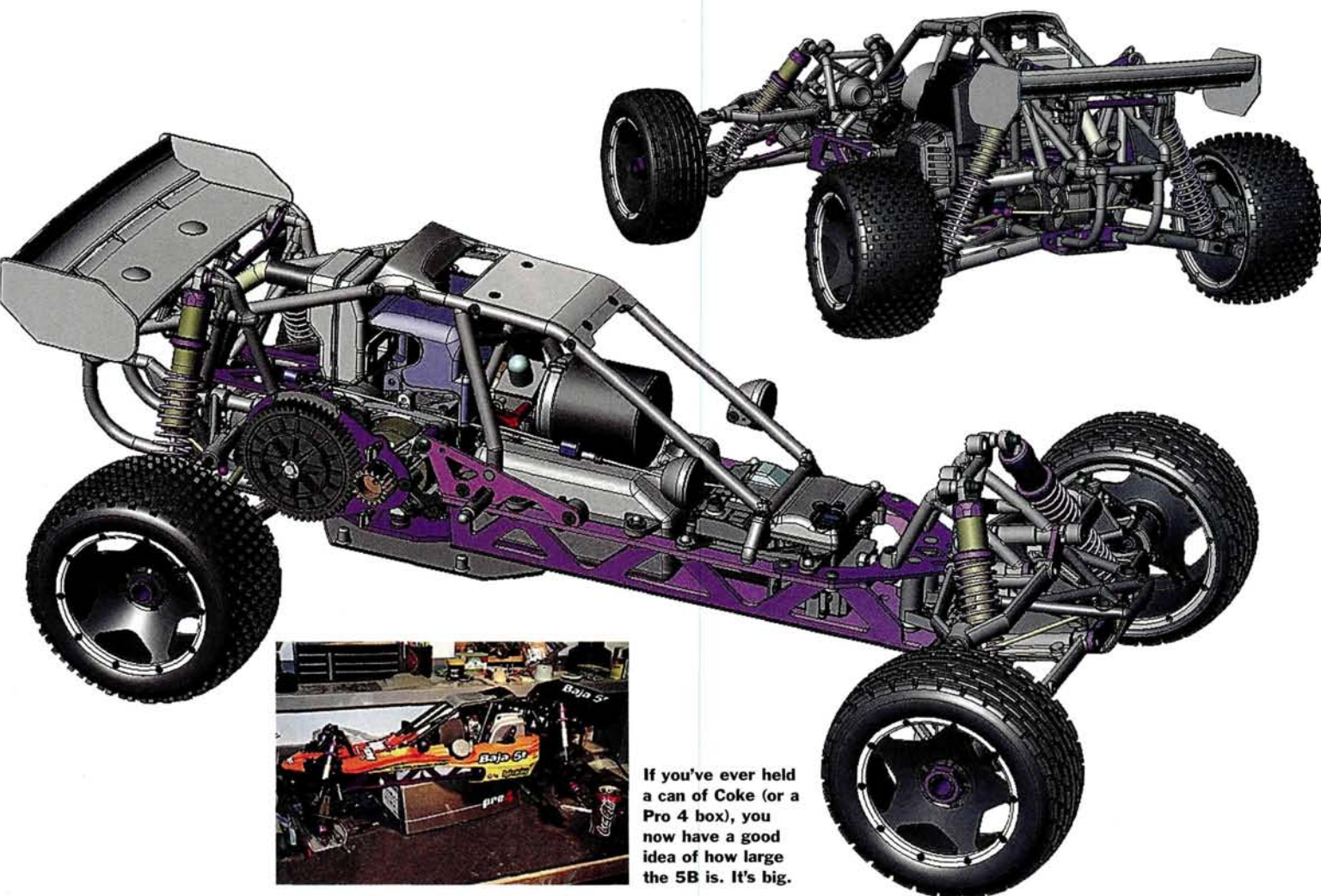
Cars rule, but which other type of RC is the closest second?

YOUR VOTES



» ONLINE NOW

What's the best track food?
Click to vote at rccaraction.com!



If you've ever held a can of Coke (or a Pro 4 box), you now have a good idea of how large the 5B is. It's big.

HPI Racing Baja 5B

So, you think you know what 1/5-scale off-road is all about? Think again. HPI's mega-buggy is the tightest-looking gas rig we've ever seen, and we've seen 'em all. The sand-rail styling is killer, and at nearly 3 feet long, the 5B should be able to shame any off-road machine in rough terrain. HPI promises 30 minutes of run time on a tank of gas (as in gasoline, not nitro), and handling that's "as quick and nimble as a 1/10 buggy." We can't wait!

FEATURES

- 4mm aluminum chassis for extreme durability
- Fully adjustable suspension
- Externally adjustable "Hyper Adjust Piston" aluminum shocks with 5 damping settings
- Viscous Torque Control differential
- Hardened metal components throughout the drivetrain
- 3-piece beadlock wheels are included for glueless tire mounting
- HPI TF-10 FM radio system
- Super-torque 25 kg-cm steering servo
- Includes 2000mAh, 6V rechargeable receiver pack and AC charger
- 23cc "Fuelie" gasoline engine

HPI Racing (949) 753-1099; hpiracing.com.



Never held a Coke can? How about this guy's leg?



HPI's new K4.6 engine looks like a serious monster mill. The hard-anodized pipe will be standard equipment.

HPI Racing Hellfire

Looks like the HPI guys have been guzzling Red Bull at the CAD terminals; the new releases are coming fast and furious! The Hellfire is the latest machine to enter the truggy wars, and it looks like an A-main ride. As well it should, since HPI defines it as "a purpose-built, high-performance, 1/8-scale 4WD monster truck that combines the durability of the Savage with the agility of an 1/8-scale buggy." Good combo! And Savage fans, no worries: HPI says the Hellfire will sit alongside the Savage in the HPI monster truck lineup.

FEATURES

- Includes K4.6 HO high-performance .28 engine, 5-cell 1100mAh receiver pack and 2-hour wall charger
- Designed for easier maintenance with simplified differential access, high-quality hex hardware and no E-clips
- Internal drive ratio is optimized for .21 and .28 race engines
- Steering and suspension geometries designed specifically for the Hellfire
- Adjustable front and rear inboard toe, camber, anti-dive, anti-squat and front kickup.
- Adjustable compression and rebound via tapered shock pistons
- Chassis braces included to adjust overall chassis stiffness for smooth or bumpy tracks
- Hard-anodized exhaust pipe for maximum power
- 150cc fuel tank for longer run times than buggy-spec 125cc tank-equipped trucks
- CV driveshafts throughout
- 3.5mm titanium-nitride shock shafts and suspension pins

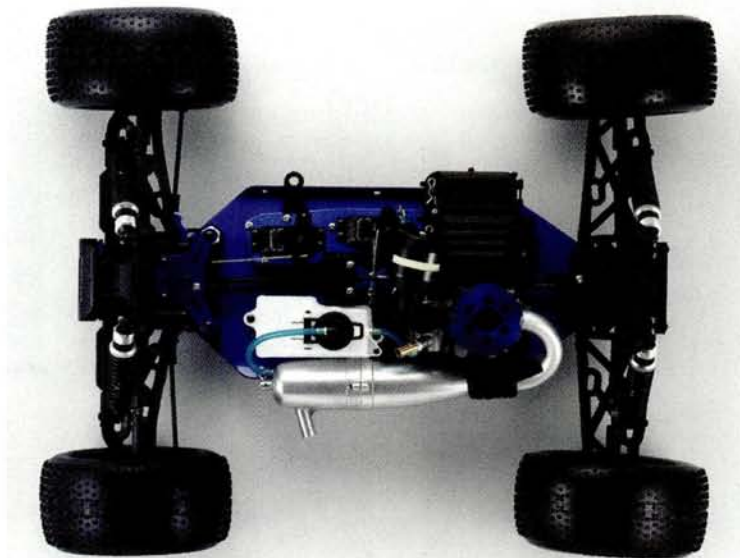
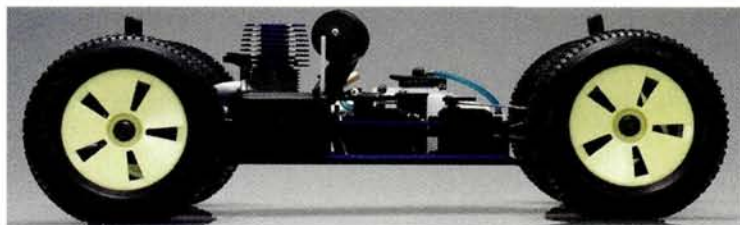
HPI Racing (949) 753-1099; hpiracing.com.



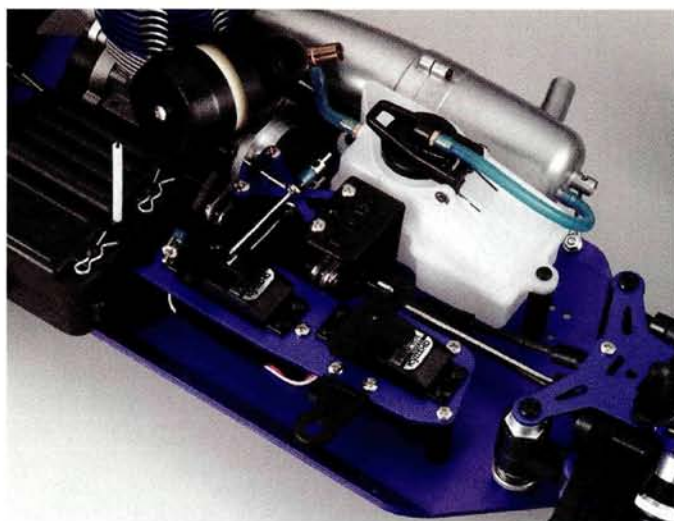
kyosho inferno ST RTR

The Inferno ST is back, but it bears no relationship to the old skinny-tire truck of the mid-90s. This new truggy is built on the Worlds-winning Inferno-series platform, but it's customized for truck duty with longer arms and a stretched wheelbase. No official specs yet, but you can expect full bearings, a .21 (or larger) pull-start engine and Perflex AM radio gear.

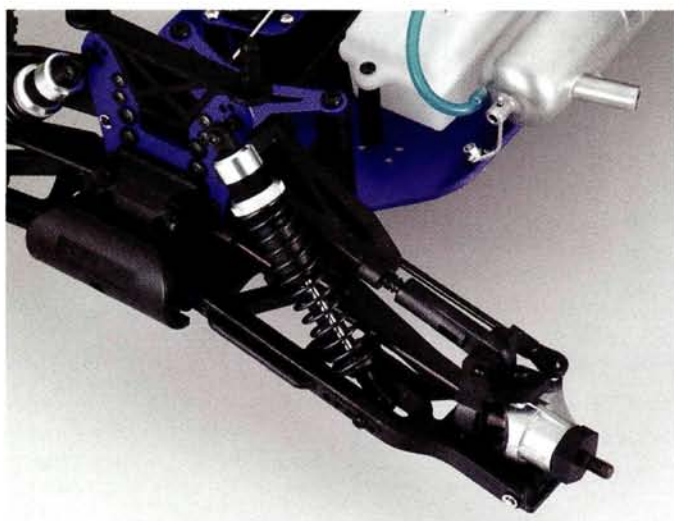
Kyosho Corp. of America (800) 716-4518; kyoshoamerica.com.



This view shows off the ST's long wheelbase and clean layout. Very sano.



The stretched chassis gives plenty of wrenching room. Note the deeply shrouded air filter.



Long arms give the ST its truck-specific stance, and 17mm hexes grab the wheels.

insidescoop



Team Magic Formula 8 Nitro Buggy Bag

Wow! If this isn't the greatest RC bag ever, what is? The corrugated-plastic drawers are easy to clean and won't deteriorate like cardboard, and everywhere you look, there are clever details—from the pull-handle and wheels for easy rolling, to the roll-up drawer cover and removable tool caddy. Gotta get one!

teammagic.com.tw
Planes Model Distributors
(217) 398-6300; (800) 682-8948; duratrax.com.

>>>PIT BOX



Team Losi clutch shoe spring tool

Installing and removing clutch shoes and springs on big-block .21 to .30 engines is much easier with this clever tool. A pivoting arm holds the clutch shoe and retracts the spring so that the shoe can be removed. Then flip the arm over to correctly position and push the shoe on while retracting the spring during installation. Your fingers will thank you.

Team Losi; distributed by Horizon Hobby Inc.
(800) 338-4639; teamlosi.com; horizonhobby.com.

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Tared "Bad Boy" Winston

Protoform

PONTIAC G6 and STRATUS 3.1

You don't have to be a guest on Oprah or have \$30K in spare change to get into a G6! Protoform's new Pontiac shell is built for high-bite tracks where extra downforce isn't a good thing. It's "designed specifically for the demands of a carpet track with 'hyper traction'" says Protoform, and it meets all IFMAR and ROAR specs (but there's also a trim line for "extra slammed" mounting when the tech guys aren't looking). For you nitro sedan fans, there's the Stratus 3.1. It's shaped for neutral balance and high-speed stability, and it just plain looks good. Both include wing, window masks, overspray film and decals, as always.

Protoform Inc.; distributed by
Pro-Line (951) 849-9781;
pro-lineracing.com.



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www.megatech.com



DURATRAX vendetta 1/18-scale RTR mini buggy

"The first 1/18-scale buggy with 1/8-scale racing features" says DuraTrax, and they ain't lyin'. Oil-filled shocks, full bearings and a completely adjustable suspension make this a serious mini machine, and it should be fast with its 380 motor and 7.2V 600mAh pack. There's lots of aluminum on board, too, so expect it to be tough. The shock towers, steering drag link, front brace and driveshaft are all made of the stuff. Like other DuraTrax RTRs, the Vendetta is complete right down to AAs for the radio, so you can hit the track fast.

DuraTrax, distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; duratrax.com.

Pro-Line TC series spinner combos

Winning races? That's for uptight fun-ruiners. Style is where it's at, and now spinner style is extra easy to get. Pro-Line's combo packs are one-stop style shopping; they include 8-ball wheels, ball-bearing spinners and Packin' Heat tires. Way super dope.

Pro-Line (951) 849-9781; pro-lineracing.com.



Brazimoto 1/5-scale Motorcycle wheels

Brazimoto's new multi-spoke wheels are CNC-machined out of 6061 billet-aluminum stock and come in five finishes: blue, red, gold, black and polished. The wheels are about 15 percent lighter than the stock Thunder Tiger FM-1e wheels. The front wheels are available with and without a Nuova Faor-compatible brake-disc hub. They are a direct replacement for most Thunder Tiger and Nuova Faor electric motorcycles.

brazimoto.com (949) 916-8835.



>>>PIT BOX



RPM Monster camber gauge

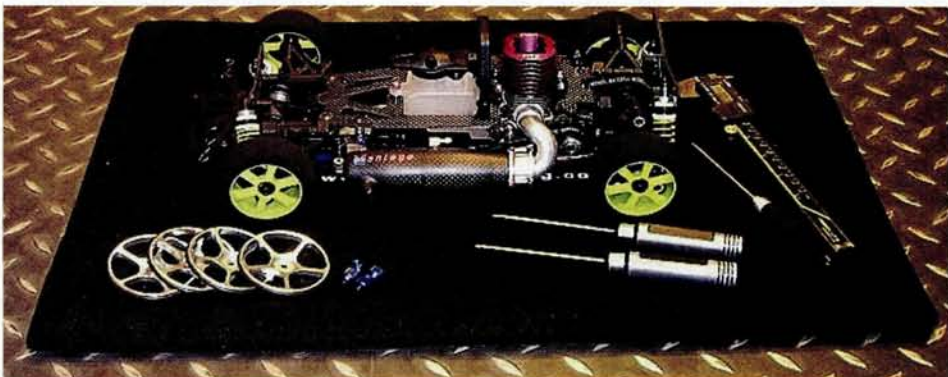
RPM's classic plastic camber gauge deserves a spot in the RC products hall of fame, but it's just too short for today's mega-monster treads. So RPM made a longer one! Now you can get those camber angles right with all the convenience and accuracy of your good ol' RPM camber gauge.

RPM R/C Products (909) 393-0366; rpmrcproducts.com.

vantage promat

Time to toss the towel! The Promat's raised sides prevent rollaways, and unlike terrycloth, the loopless material won't snag on tools or parts. C'mon, treat yourself. After all, a Sunday of racing is 20 minutes of track time and eight hours of pit time. Upgrade!

Vantage Racing (626) 582-8775. ■



reader's ride OF THE MONTH



Nick Seng > Crystal Lake, IL **XTM Racing X-Cellerator**

Fifteen-year-old Nick Seng earned the nod for Reader's Ride of the Month for his well-executed, modified XTM X-Cellerator stadium truck. He didn't just bolt on after-market parts; he took the extra step and detailed the chassis. He painted all of the plastic parts chrome, and he stripped and polished all of the metal gear to make his ride look like a show truck, and he tells us he races this beauty. The following hop-ups were added to his truck: Airtronics MX3 radio, Hitec HS-635 steering servo and HS-645MG throttle servo, Fantom FR18 engine, Motor Saver air filter, DuBro fuel tubing and filter, OFNA exhaust manifold and mini fail-safe, RPM Clawz wheels, heavy-duty rod ends and B4/T4 front bumper, Hot Bodies T-Maxx rear shocks, Lunsford titanium turnbuckles and Pro-Line Crowd Pleazer body and Masher 2000 tires. Great job!



Christian Hanisch > Bad Salzungen, Germany **Team Associated Nitro TC3**

You may be scratching your head on this reader's ride. Christian found one of Kyosho's Ferrari 250 GTO Nostalgic series bodies and mounted it on a Nitro TC3. He powers his vintage ride with a O.S. 12TZ engine and controls it using a KO Propo radio system with Hitec HS-5925MG servos. Christian tells us it is quite a sight when the Ferrari is cruising at speed, but nerve-racking, since the body is irreplaceable.



Ian Francisco > Union City, CA **Kyosho Motorcycles**

After seeing a motorcycle way back in the March 2001 issue of *RC Car Action*, Ian was hooked and now owns three 1/8-scale Kyosho bikes and one 1/5-scale Thunder Tiger cycle. The two paint jobs on the Kyosho bikes shown here were inspired by his full-scale heroes Valentino Rossi and Alex Barros. Upping the performance, both bikes are fitted with 7.2V GP1100mAh battery packs, Mamba 6800kV brushless motors and 25A brushless ESCs, Team Associated steel pinions, GPM aluminum gearboxes, and Kyosho steel tranny gears, high-grip tires and fluid-filled shocks.



SEE YOUR RIDE IN READERS' RIDES AND WIN NOVAK GEAR!

If we feature your vehicle in Readers' Rides, you win a one-year subscription (or renewal) to *RC Car Action*. Reader's Ride of the Month wins a Novak battery pack, and Reader's Ride of the Year wins a Novak brushless motor system! Email your 300dpi TIFF or JPEG images to readersrides@airage.com, or send color prints and a description to Readers' Rides, *RC Car Action*, 100 East Ridge, Ridgefield CT 06877-4606 USA. Be sure to write your name, address and phone number on the back of each photo and on your letter. Submissions will not be returned.



[READERS' RIDES]

Duane Wiley > Fremont, CA

HPI Nitro MT2

Duane made us laugh when he told us that his MT2 is not powered by an engine but by his VISA. He converted an MT2 into an MT2 18SS, and that ate up much of his funds. Too bad he just did not wait until the MT2 18SS kit came out. He also bolted on a Vantage carbon-fiber tuned pipe, 17-tooth clutch bell, racing clutch, fiber disc brake, threaded aluminum shocks, titanium turnbuckles, universals, carbon-fiber upper deck and shock towers, swaybars, New Era roll bar, Venom fail-safe, DuBro fuel filter, Futaba S3010 servos, Pro-Line Masher tires and prepainted Ford F-150 stadium truck body from Atomik R/C.



Mike Morgan > Bumpass, VA

OFNA Titan Deluxe

This sweet-looking Jeep Rubicon started its life as an OFNA Titan Deluxe—actually, a wrecked Titan Deluxe. Mike fabricated a new 2-inch-longer chassis from 6061 aluminum so he could shoehorn in a 23cc Echo 2-stroke gasoline engine with custom muffler and a 250cc gas tank that gives him up to 55 minutes of runtime. Added to this platform are Titan Twin aluminum A-arms, bumpers, CVDs, 12 aluminum shocks and much more. MSJ 2-piece aluminum 5-spoke wheels and IMEX Jumbo Kong tires nicely complement the 1/6-scale Jeep Rubicon body stripped from a New Bright RC kit. ■

POWER UP YOUR RTR!

#700 Reedy "Rated-X" Sport Pack, GP 3300 cells

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Reedy "Spec 19 Quad-Mag Motor."

Step up the power of your RTR with Reedy's Quad-Magnet "Spec 19" Motor! A great choice for the B4 RTR, the TC3 RTR, or any Ready-to-Run electric with a speed control rated for a 19-turn or less motor.

#513 Reedy Spec 19 "Quad-Mag" Motor



Reedy's "Rated-X" Matched Sport Packs. Fully assembled in clear tubes so you can see the matching info right on the label of each cell. Don't settle for "mystery" cells in your sport packs, get Reedy's "X-Rated" packs and see the power you've been missing!

Reedy Ni-MH Receiver Packs for Nitro Cars and Trucks.

Reedy receiver packs give you the long-lasting, reliable power needed for nitro racing, and have a great low price that makes them your BEST choice!



#615 Reedy Ni-MH Receiver Pack, (Hump style for RC10GT, Monster GT, Etc.)

#614 Reedy Ni-MH Receiver pack, (Flat style for Nitro TC3, etc.)

#699 Reedy "Rated-X" Sport Pack, Panasonic 3000 cells

ONLY \$59.99 Suggested Retail Price

Chris Coffee > Barstow, CA
Team Losi LST

When Chris decided to get into the hobby, he went right for the best and bought himself the massive Losi LST monster truck. He started off by getting a Pro-Line F-650 body and had it custom-painted by Andy from Pegasus Hobbies in California. Next, he shelled out \$400 to add an oversize engine cooling head, Team Losi bead-lock wheels with Super King Pin tires and aluminum diff cases, Team Integrity aluminum suspension arms, front and rear bumpers, skid-plates, shock towers and bulkheads.



Javier Arroyo > Roseville, CA
Team Losi Triple-XS Graphite

That is one sick American flag theme on Javier's Triple-XS race car. The chassis was upgraded for racing with aftermarket roller-center blocks, steering bellcranks and motor mount, Acer Racing ceramic ball bearings, titanium turnbuckles and Sorex tires. For the electronics, he uses a Redline 19-turn motor, SMC cells and a KO VFS-1 ESC, EX-10 Helios transmitter and PDS-2343 digital steering servo. The incredible paint job was done by Will Morris of wilzwerx.com.

Mini-MAX

Reedy Hop-Ups for Micros!

ONLY
\$42.99 Suggested
 Retail Price



Reedy Mini-Max High-Voltage 1100 Ni-Mh Racing Battery Pack. Higher voltage means more power and that's just what you get with Reedy's new Mini-Max 1100s. Featuring much higher voltage output than stock battery packs the Mini-Max HV 1100 pack is the ticket to making your micro car rip up the road. Comes completely factory assembled with connector and fits directly into the RC18T! #616 Reedy Mini-Max 1100 Ni-Mh Battery Pack



ONLY
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 Retail Price

Reedy Mini-Max Modified Motor. Seriously turn up the heat in your micro with the Reedy Mini-Max Mod Motor. Big time features like ball bearings and replaceable brushes are shrunk down to the popular 280-size to fit most 1:18 vehicles, especially the RC18T. #290 Reedy Mini-Max Modified Motor

www.rc10.com/reedy

REEDY

A Division of Associated Electrics
 3585 Cadillac Ave. Costa Mesa, CA 92626



PRO TIP

Chad Bradley > Team Mugen

Prevent clutch slippage

After rebuilding a new clutch and replacing the bearings, clean the grease out of the rear bearing (closest to the clutch) with motor spray. Also, blow out the bearing with an air compressor if you can. This will greatly reduce the life of that bearing, but it will prevent the clutch from slipping because the grease was thrown out of the bearing during the first few tanks after you replaced it.

YOUR TIP

Kim Hein

> South Africa

Cheap touring-car-tire caddy

The tubes that tennis balls are sold in are the perfect size for storing touring car tires. The tubes can hold four or five pairs of tires; stick labels on the tubes to let you know which tire compounds are stored inside.



YOUR TIP

Jonathan Ruden > USA

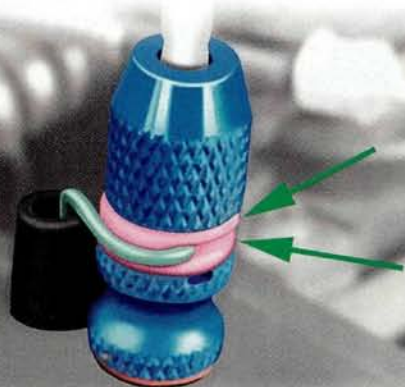
RC18T dirt shield

Stones and other debris can enter through the opening in the chassis under the motor and get caught between the gears. To prevent this from happening, cut a 35x46mm piece of scrap Lexan and lay it under the motor. The motor will keep the Lexan in place, so there's no need to glue it, and it will protect the gears from the elements.



Increase rear downforce

If your touring car feels a little loose, you can enlarge the surface area of the rear wing with a strip of scrap Lexan. Cut a piece of Lexan that's the same length as the wing, and attach it to the end of the wing with double-sided tape. Trim the strip's height to adjust downforce.



PRO TIP

Marty Korn > GS Racing

Protect your antenna wire

Most clamp-type antenna tubes will fray the antenna wires where they go through the slot in the clamp and wear against the sharp metal edges. This can lead to a damaged receiver wire and glitching. Run an O-ring beneath and above the wires to protect your antenna wires and avoid this problem.



YOUR TIP

Bill Culver > Corona, CA

Protective-film body repair

Associated's clear protective film (item no. 6312) also works great to repair cracks and holes in Lexan bodies. Just cut a piece out and stick it on the crack in the body. The film will last a long time, and one sheet can be used to repair many bodies.



YOUR TIP

John DeMundo > Winnetka, CA

Do-it-yourself deep-dish TC wheels

You can easily make your own deep-dish, wide-offset touring car wheels by cutting the mounting flange off the back of the wheel and then gluing the flange to the front of the wheel. Be sure to sand the flange and the wheel before you glue them together. The wheels will look cool, and they'll give your car a slightly wider track.



Secure your servos

Run rubber grommets on your nitro vehicle's servos. They will reduce the likelihood of damage to the case ears, they'll decrease vibration, and they'll also help to prevent glitching.

CLICK TRIP
rccaraction.com
 >>> More Pit Tips online!



WE WANT YOUR TIPS!

If we publish your tip, you'll win a 6-month subscription (or extension) and a chance to win the "Tip of the Year" grand prize: an OFNA RTR. Email your tips to GeorgeG@airage.com. Include a photo or scan a sketch if you can. Snail mail? Write to Pit Tips, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Be sure to write your name, address and phone number on each tip you submit.



We screen all Pit Tips for functionality, feasibility and safety but do not test them. RC Car Action is not responsible if you mess up your gear or yourself by using the tips given here. If you aren't comfortable following any tip we show—DON'T!

Stalls when braking

Q I'm having trouble keeping the engine in my stadium truck running. I replaced the throttle servo because it was drenched with fuel and had stopped working. Now, when I apply the brakes, the engine always stalls. I adjusted the throttle trim on my radio and raised the idle on the carb, and that helped a little, but the idle is so high now that the truck lurches forwards even when I have the brakes on. I'm new to nitro, and I'm not sure how to fix this problem. Do you have any advice?

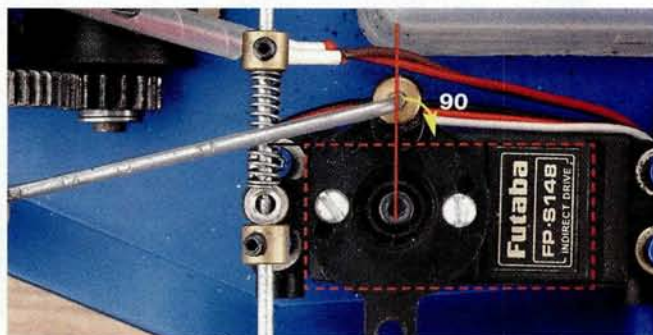
[Email]

Kyle Davis

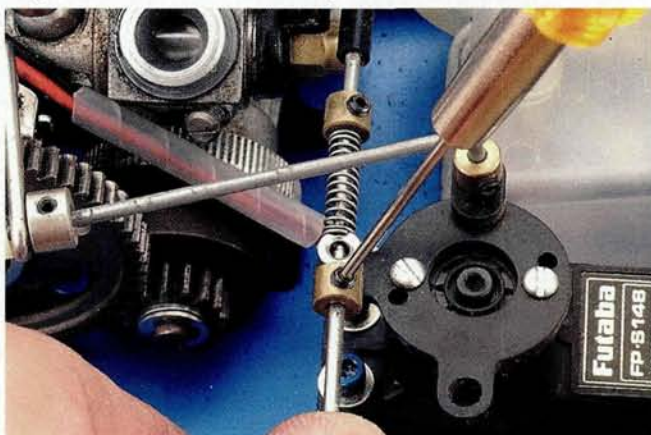
A It sounds like you have to trim out the throttle properly and adjust your truck's throttle linkage, Kyle. First, set your radio's throttle-trim knob to neutral (center position). Turn on the radio, and flick the truck's switch to the "on" position. Next, check the servo horn to make sure that it is properly centered on the servo. If the servo horn is not centered, remove it by loosening the servo-horn-mounting screw, and then reinstall it in the centered position. Next, remove the air filter so that you can look inside the carburetor while you adjust the linkage.

The carburetor lever should be in the fully closed position when the servo is in the neutral position. If the throttle only partially closes when at neutral and then closes completely when you apply the brakes, you'll have to adjust the throttle linkage. Loosen the setscrew on the linkage stop that's installed on the servo horn, and push the linkage forward until the carb closes all the way. Tighten the setscrew and then test the setting by squeezing the throttle trigger on the radio. Depending on the type of carb you have, the throttle lever should open the carburetor barrel or venturi all the way when you go to full throttle and return to the closed position when you bring the trigger back to neutral.

You may have to adjust the idle speed to get the engine idling properly and readjust the brake linkage after you've made these adjustments, but your truck should not stall when you apply the brakes.



Set your radio's throttle trim to neutral (center), and then make sure that the servo horn is properly centered on the servo. You may have to remove the horn so you can re-center it on the servo.



Loosen the setscrew on the linkage stop, and then push the throttle linkage forward so that it closes the carb. Now the carb will be fully closed when the throttle trigger is in the neutral position and will not close any further when the brakes are applied.

Long-lasting treads

Q I received a Traxxas Rustler for my birthday, and I'm really happy with it. I wonder if I can put better tires on it because I have worn down the rear tires into slicks. I mostly run on the street and on grass, and I would like tires that last longer. I don't have much money to spend, and I'd rather buy extra battery packs instead of new rear tires all the time. What type of tires should I get?

[Email]

Mathew Gaule

A It sounds as if you need to equip your truck with front and rear all-terrain tires, Mathew. Pro-Line Dirt Hawg II (item no. 1070-00) or Team Losi Smasher (item no. LOSA7680R) tires are good choices for the type of terrain you race on, and they might just outlast your truck! You'll need two pairs of tires and Traxxas Rustler front and rear rims (item nos. 3673—front, 3672—rear) to complete the makeover. The Pro-Line and Losi tires are molded out of a softer rubber compound than the stock tires, so they'll provide better traction and bump absorption. In short, your truck will handle better and be easier to drive.



All-terrain tires such as Pro-Line's Dirt Hawg IIs are a great choice for general bashing duties, and they're super-long-lasting.

QUICKQUESTION

Can I put a 7-cell pack in my TC4 RTR? Can the stock speed control handle the power?

The LRP AI Super reverse speed control is designed for 4- to 7-cell operation and can handle motors with winds of more than 13 turns, so it should be able to handle 7 cells and the stock 15-turn motor without problems. To handle the extra voltage, however, you'll have to swap the stock battery connectors with high-performance connectors such as Deans Ultra Plugs.

[TROUBLESHOOTING]

Stay-put RC18T lower spring retainers

Q I have an RC18T that's pretty much stock except for a Reedy mod motor. The truck runs great, and it's superquick, but for some reason, the lower spring retainers that are attached to the shocks fall off. When I increase the spring tension by adding preload clips, those little suckers stay in place, but then the truck doesn't handle as well and flips over more frequently. I would sure appreciate a quick fix because I'm getting tired of searching for spring retainers in the dirt.

[Email]

Ron Jenkins

A Actually, I do have a quick fix for you directly from the Team Associated R&D department. Install upper spring perches on the bottom of the shock springs (as well as on the top). Rest the upper perches above the lower spring retainers. The extra perches center the springs on the lower retainers better. Team Associated sells a shock accessory package (item no. PN 21191) that includes the four upper perches you need to complete this mod along with extra preload spacers and lower spring retainers.



Above: install an upper spring perch on the bottom of the shock spring as shown.

Left: install the lower retainers on the shocks, and you're finished. The extra perches will support the spring better and prevent the lower spring retainers from being ejected when the truck lands off monster jumps.

Traxxas Revo Hardened Steel Spur and Clutchbell

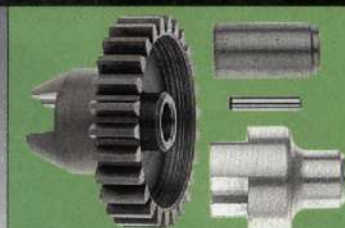
NEW



Traxxas Revo 2.5 Extra-Hard Steel Combo Includes Precision Machined 40T Spur / 16T Clutchbell, and 3 Lock Washers. RRP 8040.

PERFORMANCE FROM ROBINSON RACING!

T-Maxx/2.5-Maxx FORWARD ONLY Steel Gear Kit



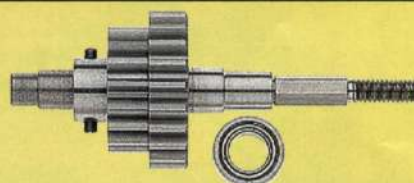
This kit contains a 26T hardened steel output gear, a forward drive hub adaptor, steel spacer and Pin. RRP 8586.

T-Maxx/2.5-Maxx Lightened Spur And Double-Disc™ Slipper Kit



RRP's line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx/2.5-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor, 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. Complete Slipper Kits are available in the following sizes:
RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock size) for E-Maxx.
RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro.
RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro.
RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx.
Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx/2.5-Maxx Steel Top Shaft



This precision machined hardened steel top shaft will fit all T-Maxx. Includes oversized ball bearing. RRP 8525.

www.robinsonracing.com

sponsored by



The truth about aluminum

Q I bought a couple of Team Losi Mini-T trucks so my son and I can race in our yard. We sure love these trucks, and we've added oil-filled shocks, bearings, mod motors and 6-cell battery packs. Now that the trucks are faster, we break parts more frequently. We've broken a few rear hub carriers and front steering arms. Would aluminum replacements make the trucks stronger?

[Email]

Nick Gonzales

A Aluminum suspension components look great, and they usually are stronger than the parts they replace, but using them also has its downside. The stock plastic suspension components are designed to flex a little to add crash protection. Aluminum is rigid, so it will not flex in a crash. Replacing the rear hub carriers and front steering blocks with aluminum units will probably cause other suspension components such as the front caster blocks and rear suspension arms to break instead. Another thing to consider is that you can probably buy five pairs of rear hub carriers for the price of a single pair of aluminum units. You'll discover that as you become accustomed to the increased speed, you'll break fewer parts, so you'll make fewer trips to the hobby shop.



QUICKQUESTION

I bought an 1100mAh battery pack to power the electronics in my nitro truck. How do I charge it?

Your best bet is to pick up a Traxxas RX Power Charger at your local hobby shop. The charger sells for less than \$24, which makes it one of the most affordable chargers of its type. It works great, too.

Installing aluminum suspension components is a nice way to dress up the chassis, but it rarely makes your truck more durable. You may not break those parts anymore, but you'll end up breaking something else. As you become a more experienced driver, you'll break fewer parts anyway.

T/E-Maxx/2.5-Maxx Steel Diff Gear Set



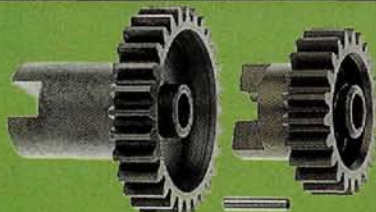
T/E-Maxx/2.5-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. RRP 8590.

T-Maxx/2.5-Maxx Aluminum High Performance Brake Kit



This lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. Also fits newer T-Maxx. RRP 8562.

T-Maxx/2.5-Maxx Forward Primary & Reverse Gears



This kit contains a precision machined hardened steel primary forward gear, a hardened aluminum reverse gear and steel pin. RRP 8521.

**REAL
PERFORMANCE
PRODUCTS!**

T/E-Maxx/2.5-Maxx Accessory Spurs



A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72, 74 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65 and 72T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

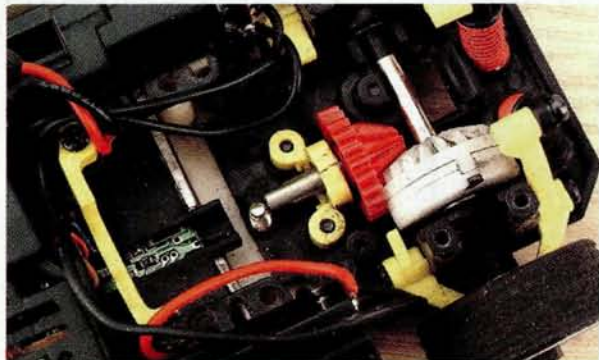


ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937



Cut the center propeller shaft so that it is 15mm long.



Thread a screw through the chassis (as shown) to hold the shortened propeller shaft in place during operation.

XMOD speed secret

Q My friends and I race our RadioShack XMODS on a small carpet track that we roll out on the patio. We've all hopped up our cars with bearings, mod motors and just about everything else that's available for them. My Supra just isn't as fast as my buddy's RSX. It's 2WD, and yet it kicks butt on my 4WD car. I decided to switch back to 2WD, but his car still accelerates faster than mine does. What is his secret? [Email]

Tommy Johnston

A If both cars are equipped with the same batteries and motor, and the weight of the bodies and tires are equal, they should perform similarly unless your buddy has modified his vehicle. A heavy, steel, center driveshaft is installed in every XMOD, so you can convert the car to 4WD. If you run only 2WD, the driveshaft can be shortened by two-thirds, and that significantly lightens the drivetrain and makes the car faster. The only problem is that you can't go back to 4WD after you've completed this mod.

If you choose to make the mod, cut the center driveshaft so that it's 15mm long. A Dremel equipped with a cutoff bit works great for this, but you can also use a hacksaw and a vise. After you've finished cutting, replace the bevel gear at the end of the shaft, and then reinstall the shaft on the chassis. Next, make a small screw hole in the chassis directly in front of the shaft, and then thread a 2x6mm screw through the bottom of chassis. The screw will poke up through the chassis and will hold the shaft in place during operation. You should be able to hang with your buddy after performing this mod.

RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this RC10-GT gear is lightened and hardened for super quiet precision and extra long life. Black tranny grease included. RRP 2213.

MAKE NO COMPROMISES!

Hardened Aluminum Mini Pinions

NEW

NEW For Associated RC18T .5 mod Lightweight Hardened Aluminum Mini Pinion, Available in 12T Thru 18T. RRP 16XX.



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HPI Savage .21/.25 Nitro Steel Combos



These Spurs and Clutch Bells are CNC machined from solid steel and then hardened for unmatched performance. Savage .25 (16x48) RRP 7048. Savage .21 (14x52) RRP 7052.

DON'T SETTLE FOR SECOND BEST!

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. RRP 2365.

Hardened Diff Gear

Hard anodized, precision CNC machined aluminum diff gear. RC10-GT RRP 1513. Losi XXX NT RRP 9500.



ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338

Shockproof fuel tank

Q I bought an OFNA Ultra MBX buggy to bash around with and occasionally race at my track. The buggy runs great, and it's really fast, but I've managed to crack the fuel tank twice during hard landings from jumps. I always stock a spare fuel tank when I go racing, but I wonder whether there is a way to fix a cracked fuel tank.

[Email]

Jon Epstein

A Some racers fix small cracks in their fuel tanks by passing the tip of a hot soldering iron along the crack to melt the plastic. Unfortunately, this type of quick fix is only temporary; it might get you through a day of racing (if you're lucky). Your best bet is to cushion the fuel tank with O-rings, and make sure that you don't over-tighten the fuel-tank mounting screws. The fuel tank needs a little wiggle room to protect it from shock and cut down on vibration. Fortunately, this is easy and cheap to do.

Just place an O-ring between each of the tank's mounting lugs and the chassis. Tighten the screws until you feel a little tension, and then back them out a little. You want to be able to rock the tank from side to side slightly, but you don't want to be able to move it up and down the posts.

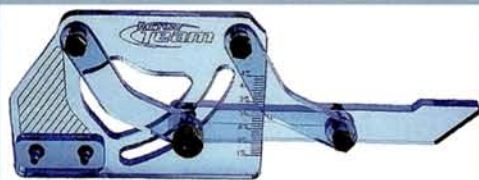


Above: passing the tip of a hot soldering iron over the small crack in a fuel tank will melt the plastic and repair a crack. Unfortunately, this fix may only last for a few tanks of fuel.

Below: cushioning the fuel tank's mounting points with O-rings (above and below the mounting ears) will protect the tank from shock and vibration. Use thread-lock to hold the screws because they must be installed loosely.



TOOLBOX



Team Associated Off-road Ride-height Gauge

Team Associated's new Off-road Ride-height Gauge is made out of rugged acrylic to take the abuse of bashing around inside your toolbox, and the blue-translucent color looks great. The swinging cantilever design makes it easy to reach high-riding off-road chassis, and a thumbscrew holds the settings so you can compare the ride height on all sides of the vehicle. The etched-in graduated scale makes reading the measurements a snap—even without your glasses on. Team Associated Off-road Ride-height Gauge—1449; \$25



**NEED
HELP?**

Send your "Troubleshooting" questions and comments to troubleshooting@airage.com, or mail them to

"Troubleshooting" c/o RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

HPI Savage .25 3-Shoe Vented Flywheel

NEW



The Savage .25 3-Shoe flywheel is precision CNC machined from 7075 aluminum and vented for increased airflow. RRP 7005. (.21 Pull-Start 2-Shoe version RRP-7000.)

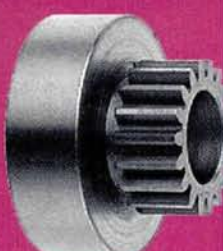
REAL PERFORMANCE PRODUCTS!

Traxxas Revo/2.5-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. Revo RRP 8052 and 2.5-Maxx RRP 8552 Vented Flywheels. Both Blue Only.

T-Maxx/2.5-Maxx Hardened Steel Clutchbells



CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

HPI Savage .21 Extra Hard Steel Clutchbells



These Clutch Bells are CNC machined from solid steel and then hardened for unmatched performance and durability. Available in 14T, 16T and 18T. RRP 70XX.

RC-10GT Hardened Steel Clutchbells



These Clutch Bells are CNC machined from solid steel then the teeth are machined on. This makes the part stronger with less gear "run out". Available in 14T thru 20T, 22T and 24T. RRP 22XX.

48P Absolute Series Pinions



Super hard, lightened and cut with superb precision. Runs great with any 48P spur! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P).

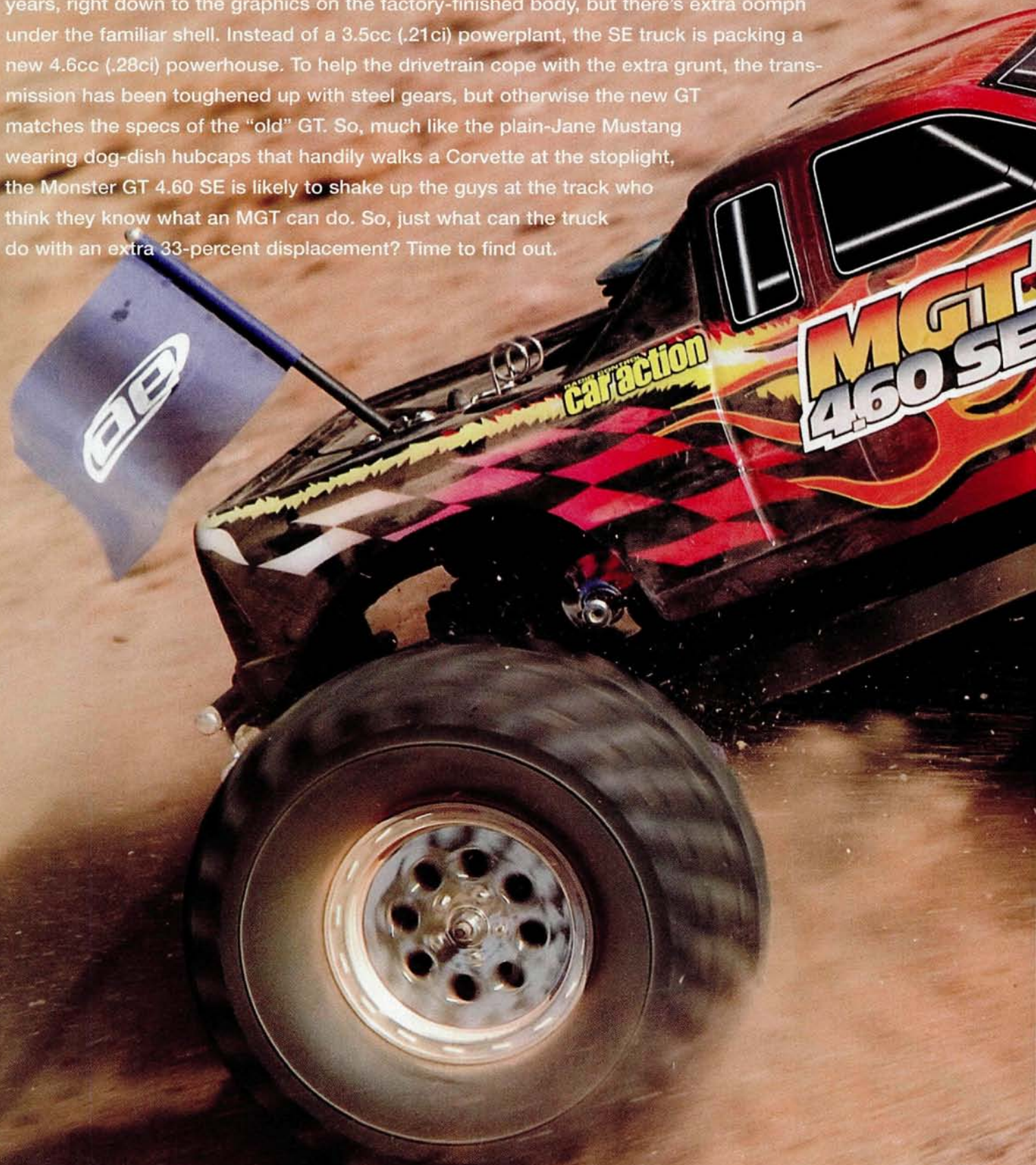
48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035.

The Monster GT powers up on the down-low

Think of the Monster GT 4.60 SE as the sleeper of the big-block monster truck class. It looks like the same ol' MGT we've seen tearing up tracks and backyards for the past two years, right down to the graphics on the factory-finished body, but there's extra oomph under the familiar shell. Instead of a 3.5cc (.21ci) powerplant, the SE truck is packing a new 4.6cc (.28ci) powerhouse. To help the drivetrain cope with the extra grunt, the transmission has been toughened up with steel gears, but otherwise the new GT matches the specs of the "old" GT. So, much like the plain-Jane Mustang wearing dog-dish hubcaps that handily walks a Corvette at the stoplight, the Monster GT 4.60 SE is likely to shake up the guys at the track who think they know what an MGT can do. So, just what can the truck do with an extra 33-percent displacement? Time to find out.





Associated
Monster GT
4.60 SE

KIT FEATURES

CHASSIS. While all big-block monster trucks are built around some configuration of flat plates, the Monster GT stands alone with its unique extruded aluminum chassis. A single girder-like "spine" supports the drivetrain and suspension, and it's so stiff that no additional braces are used above or below the chassis. There are aluminum skidplates in place to protect the gearboxes and steering gear, but the one-piece chassis does all the heavy lifting. High-walled plastic sideguards keep most of the tires' roost from reaching the chassis, and enclosed boxes with hinged lids stow the receiver and battery. The steering servo is suspended below the chassis, and since it's in harm's way, Associated wisely incorporated a substantial bash guard into its mount.

DRIVETRAIN. Steel is real; that's the story here. The internal transmission gears are all steel for maximum strength, and since the GT gearbox already has a reputation for durability and is equipped with a gear-sparing slipper clutch, the SE's gearbox should be just about bombproof. The slipper is a peg-type design; instead of squeezing a slipper pad against the spur gear, pegs of slipper material are inserted into the spur gear. When the pressure plates clamp down, they squeeze the pegs and not the gear itself.

Servo-shifted reverse lets the MGT back out of trouble, and the system is a stout yet simple arrangement that uses a shift fork to engage and disengage independent constant-mesh geartrains. The transmission also packs a pawl-type 2-speed (adjustable, of course), and since there isn't a center diff, a single brake can be used to stop the truck. A steel caliper grabs a meaty 5.5mm fiber rotor that looks like it should last approximately forever, and a thumbwheel adjuster makes it easy to adjust braking strength. All that stop-and-go action reaches a pair of O-ring-sealed, steel-gear differentials via heavy-duty steel CV driveshafts.

SUSPENSION AND STEERING. The MGT gets plenty of plush travel from its 8-shock, T-Maxx style suspension. As with the Maxx, plastic-body shocks pass through the upper arms to reach molded shock towers, and pivot-ball suspension with identical front and rear components allow full camber and toe-in adjustability. Unlike the Maxx, the MGT's shocks wear nonfunctional reservoirs. I can't help but think of them as unneeded weight—even though the few grams they represent add up to very little of the truck's overall 12-pound weight.

Steering control comes from a pair of metal-bushed bellcranks that do not incorporate a servo-saver. Instead, the saver is attached directly to the servo. It's nonadjustable, but I'm

INCLUDED ELECTRONICS & ACCESSORIES

ASSOCIATED XP-3 3-CHANNEL TRANSMITTER

Most RTRs include nearly non-adjustable radios, but the MGT's system gives you full control of throttle endpoints and steering dual-rate as well as third-channel control for the transmission actuator servo. The latter is controlled by a switch on the grip, which is easy to flip accidentally if you aren't careful.

ASSOCIATED S1903 THROTTLE & SHIFT SERVOS

Basic standard servos with 41 oz.-in. of twist here, and they're fine in their low-torque roles. Inexpensive plastic-gear servos are spec'd here. They're rated at 41 oz.-in. of torque, and they work fine in their less demanding roles.

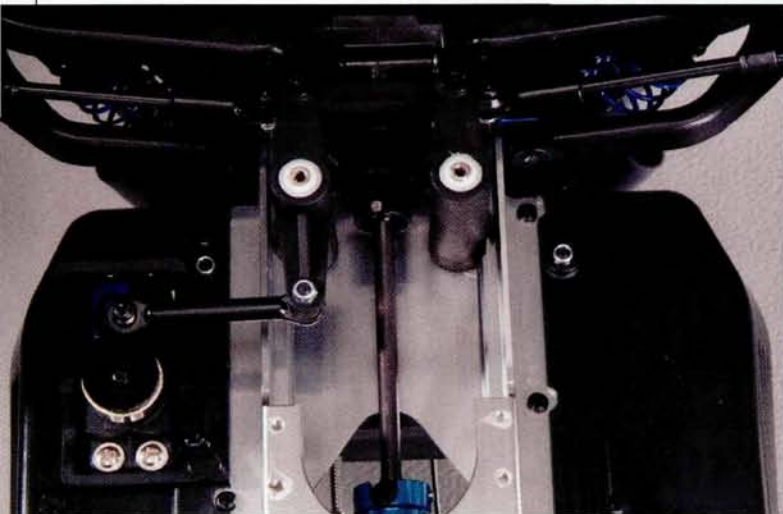


ASSOCIATED S2008MG STEERING SERVO

That's "MG" as in metal gears, and with a claimed output of 111 oz.-in., there's plenty of torque to keep the MGT in line. Torque often comes at the expense of speed, but the S2008MG swings through its travel range with a quick 0.20-second transit time. Stock steering servos are usually at the top of an RTR's "must replace" list, but not here.

TOOLS & ACCESSORIES

Associated supplies the basics. A 6mm hex shaft is included to start the engine with the help of your power drill, an assortment of "L" wrenches are provided to fit all the hex fasteners, and a cast 3-way wrench handles all the nuts. Clip-on preload spacers and extra pistons for ride-height and shock-damping adjustments are also included.



Left: nothing complex here, just a couple of bellcranks and a linkage. The stiffly sprung servo-saver is mounted directly to the high-torque servo, and a thick bash guard protects it.

Right: pull-start or shaft-start? The MGT's Dual Start system gives you both options.



SPECIFICATIONS

MANUFACTURER Team Associated

MODEL Monster GT 4.60 SE

SCALE 1/8

PRICE \$470

Varies with dealer

DIMENSIONS

Wheelbase 14.5 in. (368mm)

Width 17.25 in. (438mm)

WEIGHT

Total, as tested 12 lb. 6 oz.

(5.6kg)

CHASSIS

Type Extruded main chassis with molded side plates

Materials Aluminum, plastic

DRIVETRAIN

Type Shaft-driven 4WD

Primary 15T clutch bell/52T

spur gear

Transmission ratios 8.132:1

(first gear), 5.624:1 (second)

Final drive ratios 28.22:1 (first),

19.51:1 (second)

Driveshafts Steel, CV type

Differentials Sealed bevel-gear with steel ring and pinion

Bearing type Rubber-sealed ball bearings

SUSPENSION

Type Pivot-ball

Shocks Plastic-body, oil-filled

WHEELS

Type One-piece plastic, Maxx-size with 14mm hex

TIRES

Type Associated chevron tread

ENGINE & ACCESSORIES

Engine Associated 4.60

Starter Dual Start

(shaft/pull-starter combo)

Carburetor Aluminum-body, 2-needle slide

Pipe Aluminum, single-chamber

Manifold Tubular aluminum

Fuel tank 135cc dual pick-up with sintered filters

FACTORY OPTIONS

■ Blue-anodized aluminum:

- Chassis—item no. 25385
- Shock bodies—25403
- Shock caps—25404
- Steering bellcrank assembly—25395

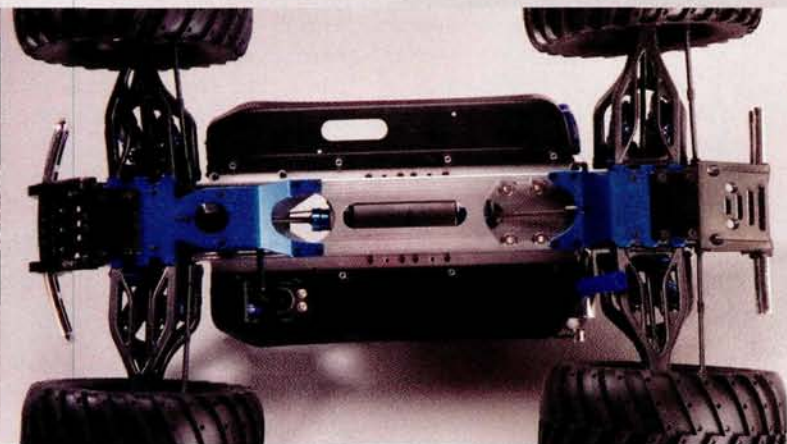
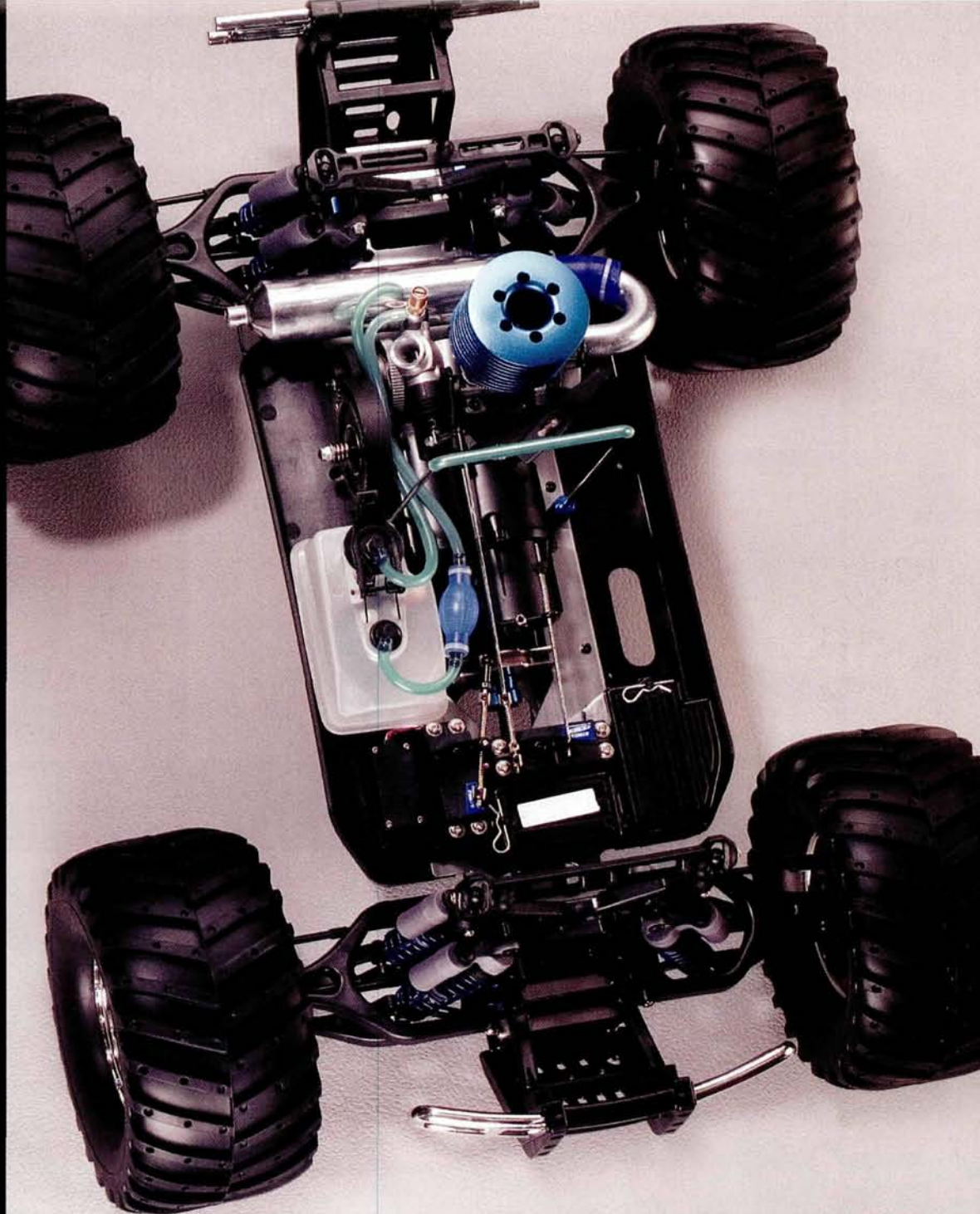
■ Titanium turnbuckles with wrench—25383

■ Forward-only transmission conversion—25415

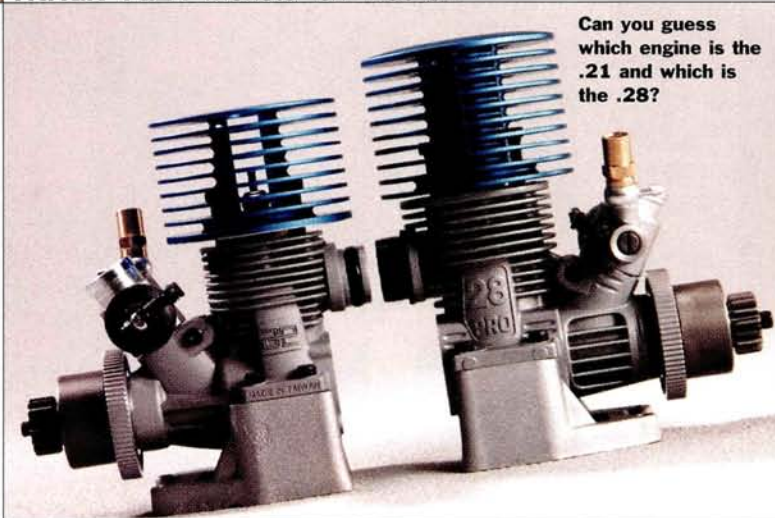
■ "Robo" brake disc—25410

■ Side-mount exhaust manifold—25405

Partial list, more options available



Above: the flip side reveals the girder-like, extruded aluminum chassis. Left: pivot balls, turnbuckle tie rods, and an assortment of preload spacers make the GT's suspension fully adjustable. The 14mm drive hexes accept all Maxx-compatible wheels.

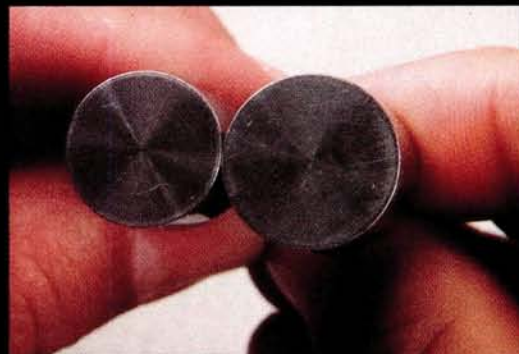


Can you guess which engine is the .21 and which is the .28?

A bigger big block: Inside Associated's new 4.6

Associated partnered with Thunder Tiger to develop the original MGT's .21 engine, and they collaborated again on the SE's 4.6cc (.28ci) engine. The new case is more heavily ribbed and much beefier around the nose bearing, and the mounting tabs are thicker as well. The exhaust port height is unchanged, but the case is taller to accommodate the 4.6's longer stroke. The heat-sink head is larger, too, both in diameter and height. Internal construction is still ABC, and the porting configuration is unchanged, but the ports are much larger.

The engine's 2-needle slide carb is unchanged, as are the engine mounts, fan-style flywheel and 3-shoe clutch. Associated's clever Dual Start system is back as well, giving you the option of firing the engine using a power drill and the included starter shaft and of yanking a pull-starter the old-fashioned way.



It's easy to spot the 4.60's larger piston, but the increased displacement isn't just a factor of piston diameter; the stroke is longer, too.



Bigger sleeve, bigger ports. ABC construction means the sleeve is brass (that's the "B") with a chrome ("C") plated bore. And the "A"? That's for the aluminum piston.

pleased to report that it is strongly sprung. I'd still prefer a bellcrank-mounted model, but the stocker works fine.

ENGINE ACCESSORIES. Some of the MGT's most interesting features don't stand out at first glance. A prime example of this is the fuel tank, which has a clever dual-pick-up system that lets the engine draw fuel normally even when the truck is upside-down. (Your trucks are never upside-down? You're not driving hard enough.) And speaking of prime, the in-line bulb primer is neat too. It isn't leak-prone like a plunger-style unit, and it really moves

TUNING

GIVE IT THE SHAFT

Save the pull-starter as a backup for those times when your drill isn't charged. The engine starts more easily with the shaft setup, and you'll spare wear and tear on the yank-starter.

THEM'S THE BRAKES

For greatly improved stopping power, replace the brake spring with an equal-length section of fuel tubing. Slip a washer over the linkage first to support the tubing where it presses the brake arm, and install the adjustment nut backwards so its flat side presses against the tubing.

FREE POWER

You can squeeze a little more go out of the engine by making certain the gap between the muffler and pipe is as close as possible and by removing the silicone exhaust stinger.

a lot of fuel with each squeeze. Another not-so-obvious feature is the MGT SE's tuned pipe and header, which appear to be unchanged from the original MGT, but the SE's pipe is significantly longer, and the header has a bend that's different from that of the standard MGT part.



With the stock and SE pipes side by side, it's easy to see the SE pipe's extra length. Note the tighter bend on the manifold as well.

BODY, TIRES AND WHEELS.

No changes here; the factory-finished body, Maxx-

size chrome wheels with 14mm hexes and tall-sidewall chevron tires are all standard-MGT carryovers. Unless someone notices the larger heat-sink head poking out of the bed, the guys at the track will think you're wheeling a .21-powered Monster GT. That's great for stealth, but I wish Associated had taken the opportunity to freshen the truck's styling or at least change up the graphics to separate the 4.60 SE from other MGTs. I scanned the box-art logos to make 4.60 SE decals; Associated doesn't include them.

LIKES

- › Supple suspension.
- › Excellent steering servo, no upgrade required.
- › Dual pick-up tank prevents upside-down stalls.

DISLIKES

- › Nonfunctional shock reservoirs.
- › Stock gearing doesn't exploit the larger engine's horsepower boost.

YOU'LL NEED

Fuel
Fuel bottle
AA batteries
Glow starter

WE USED

White Lightning 20% nitro
Venom 500cc
Team Orion 2300 NiMH
DuBro EZ-Glo

FIND IT

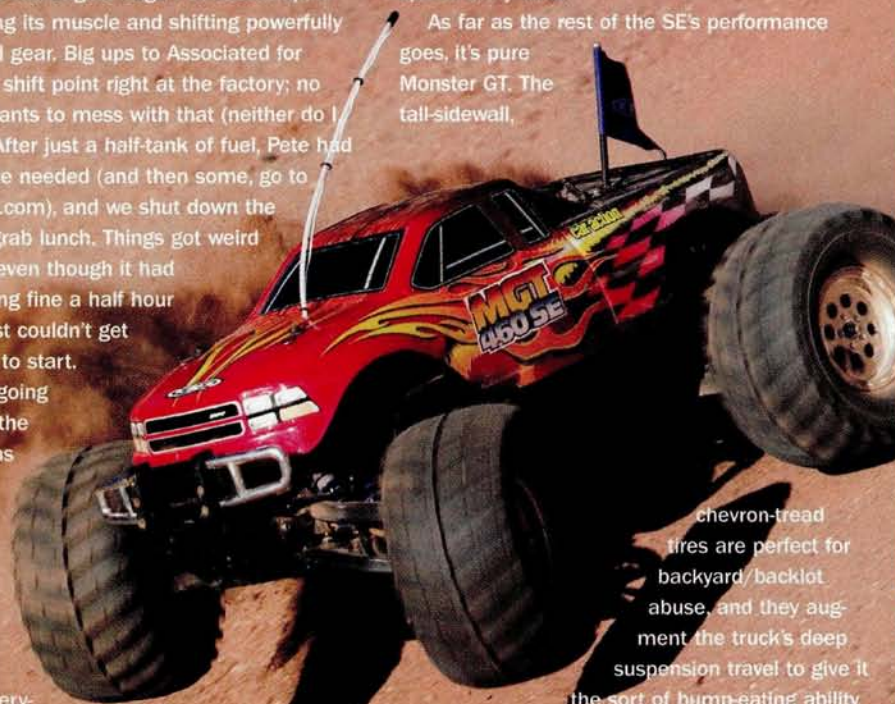
››› Go to page 243 for manufacturers' contact information

PERFORMANCE

With deadline looming, the Monster GT 4.60 SE went from the box to the studio to the cover photo shoot in record time. The engine popped to life on the second tug of the pull-starter (I would have shaft-started it, but I forgot to bring in my power drill), and Pete Hall started clicking off frames as I began breaking in the engine. Even before the engine began to loosen up, it was showing its muscle and shifting powerfully into second gear. Big ups to Associated for getting the shift point right at the factory; no beginner wants to mess with that (neither do I actually!). After just a half-tank of fuel, Pete had the shots he needed (and then some, go to rcreaction.com), and we shut down the engine to grab lunch. Things got weird after that; even though it had been running fine a half hour earlier, I just couldn't get the engine to start. Instead of going straight to the glow plug as a culprit, I started adjusting everything else and quickly made a mess of every-thing. I finally did the right thing and cleared the fuel out of the engine, reset the needles to the factory specs (they're in the engine manual) and installed a fresh plug. After the "reset," the engine started easily once again. I completed the break-in process as described in the manual and then set up for radar testing. Despite the powerful 4.60 SE engine, I didn't expect to see much difference in the truck's speed and acceleration over a standard MGT. Here's why: the SE has the same gear ratios as the .21-powered MGT, which has no problem winding out to full rpm for a top speed of about 32mph. Although unquestionably more powerful, the 4.60 SE engine will not likely generate any more rpm, given its longer stroke and bigger piston. The radar proved me wrong as the GT SE peeled off

a best pass of 36.5mph. To really exploit the new engine's pulling power, I plan to replace the stock 15/52 clutch bell/spur gear combo with a 16/46 setup, but there's nothing wrong with the stock gearing. It gives the truck super snap, and unless you plan to run exclusively on open parking lots, snap beats top speed every time.

As far as the rest of the SE's performance goes, it's pure Monster GT. The tall sidewall,



chevron-tread tires are perfect for backyard/backlot abuse, and they augment the truck's deep suspension travel to give it the sort of bump-eating ability

reserved for Baja trophy trucks. The tall tires also give the truck super ground clearance, so climbing up and over nearly anything short of vertical requires only a mash of the throttle trigger. If you do get stuck, reverse will get you out of trouble—just click the grip button. I never had a problem hitting reverse accidentally while driving, but I did hit a few times by mistake while juggling glow starter, radio and fuel bottle. No biggie. Just make sure the truck is in "forward" before you gas it!

The only area of performance that left me wanting was braking. The SE has a capable braking system, but the stock brake spring doesn't transfer enough servo squeeze to the caliper. Swap it for fuel tubing, and the GT will stop much more forcefully.

THE COMPETITION

VEHICLE >> REVIEWED
 CEN Genesis >> 9/04
 HPI Savage 25 >> 7/04
 Kyosho Giga Crusher >> 5/05
 Kyosho Mad Force >> 8/02
 RDLLogics Wolverine >> 8/05
 Team Losi LST >> 11/04
 XTM Mammoth >> 2/04

RADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 2.6	4.8 SEC.	34.0 MPH
2 SEC. > 16.9		
3 SEC. > 51.1		
4 SEC. > 95.3		
5 SEC. > 144		
	Time to top speed	Top speed
	7.9 SEC.	36.5 MPH

THE VERDICT

The Monster GT is still a great truck, and the upgrade from .21 to .28 power makes it that much more appealing. Out of the box, the extra power represents more potential for performance rather than instant gratification, but Associated has a variety of clutch bells and spur gears available to satisfy your need for speed—or for low-profile racing tires, which would also warrant a gearing change, depending on how tight your track is. But most buyers will just rip it up with this truck as is, and more power to them—it's a blast. The torquey engine and gearing deliver climbing power to spare, the premium steering servo gives it a nimble feel, and the Monster GT is as tough as a full-size monster machine. ■

RATINGS

Instructions	●●●●●●●●●●	⊗	"Quick start" guide is backed up by a thorough manual, rebuild info and engine guide.
Included electronics	●●●●●●●●●●	⊗	Excellent high-power steering servo and satisfactory (but fully adjustable) transmitter.
Parts fit & finish	●●●●●●●●●●	⊗	Very nice overall. The gray shock caps and bogus reservoirs are the only sour note.
Turn-in	●●●●●●●●●●	⊗	Soft suspension and high CG let the MGT bite hard initially, but the tires are easily overcome.
Corner speed	●●●●●●●●●●	⌋	Tends to push. Racers will make track tires their first upgrade.
On-power steering	●●●●●●●●●●	⊗	Pretty good, actually. The strong steering servo lets you adjust your line easily.
Braking	●●●●●●●●●●	⊗	Soft brake spring limits power. Replace the spring with tubing, and this score doubles.
Bump handling	●●●●●●●●●●	⊗	The GT's tall tires and gooey suspension make bumps simply disappear.
Jumping	●●●●●●●●●●	⊗	Big tires make the MGT sensitive to throttle in the air, but it's a good flier.

Best buyer>>> Nitro monster truck fans of all experience levels.

CEN Racing NEMESIS

CEN's Race-Ready Mega-Monster

EVERYONE WANTS THE BIGGEST, most powerful monster truck available. CEN has already claimed the biggest, baddest monster-truck trophy with the Genesis, which sports the largest monster truck tires ever made and is powered by a .46 engine. It may be the ultimate backyard bruiser, but for some of us, it isn't all about playing around the yard; hitting the track is also on our minds. CEN has stepped up to the plate again with a modified version of the Genesis that will tear up the dirt on the track as well as the grass in your yard. The Nemesis is a trimmed-down Genesis with race-tread tires and a sleek racing body. CEN sent over a preproduction prototype truck so you can see it here first. Let's get this thing dirty!





KIT FEATURES

CHASSIS. The Nemesis carries over the Genesis chassis setup; it's a ladder-style unit with two, 2.5mm blue-anodized aluminum side plates. The top of each plate is supported by the radio tray, receiver box, battery box, engine-mounting plate and transmission; the bottoms are supported by the lower skidplates. The skidplates not only tie the two halves of each plate together but they also protect the bottom of the diff housings and the plates of the truck. There's a bent-steel-plate handle in the truck's center, and the top has been dipped in a vinyl coating to cover its sharp edges. This handle doubles as a roll bar that protects the engine head. The fuel tank and tuned pipe hang off the sides of the chassis, since the center of the chassis is taken up by other components.

DRIVETRAIN. A race-inspired, 4-shoe composite clutch spins the 2-speed clutch bell on the big, .40 engine crankshaft, and it meshes with an externally mounted, clutch-type 2-speed. The gears are durable steel, and the clutch can be accessed through small holes in its aluminum housing. Every gear and shaft in the transmission is steel to ensure a bombproof drivetrain; that's good for all the weight that's being thrown around. A bevel-gear center diff drives the front and rear diffs using 6mm-diameter steel driveshafts, and the diff is sealed so you can tune its action with fluids of different weights. The center diff comes already filled with 200,000WT fluid. There are four, vented-steel disc brakes—two on each side of the transmission housing—and you can adjust front and rear brake bias by changing the tension on the brake levers using the supplied collars. The sealed-bevel-gear front and rear diffs are filled with 200,000WT silicone fluid. The steel ring and pinion gears are held by a cast-aluminum housing that will ensure that the gap between the ring and pinion will never change, no matter how much power is pushed through them. And, finally, the wheels are driven through 8mm-diameter steel universal joints. The entire drivetrain pivots on smooth, rubber-sealed bearings.

ENGINE AND ACCESSORIES. The CEN NX76 .46 engine is one of the biggest on the market. It features ABC construction and a 2-needle slide carb with a 7.3mm bore; a large heat-sink head keeps operating temps to a minimum. To fire up the engine, there's a heavy-duty pull-starter on the back of it. A large foam element cleans the air that enters the carb, and a polished tuned pipe takes the spent gases out of the block. The multipiece pipe has many fins that draw heat away from the pipe when the engine is running. The one-piece aluminum engine mount has

INCLUDED ELECTRONICS & ACCESSORIES

AIRTRONICS MX3 RADIO

CEN ships the Nemesis with an MX3 radio to control the servo action. It's a 3-channel unit, but

of torque, and that's plenty of power for the jobs they have.

GLOW STARTER & TOOLS

CEN includes a rechargeable glow-starter to get your engine fired up. The only problem is that you have to wait for it to charge before you can use it. Various tools



you'll need only 2 for this truck. You'll be happy that it has three channels if you decide to purchase the parts to install reverse. It also has 5-model memory, digital trims, adjustable servo speed, exponential and endpoint adjustment. An LCD screen shows you what's going on with the radio.



Two high-torque servos with a claimed 144 oz.-in. of torque handle steering, throttle and braking.

CEN G82122 HIGH-TORQUE SERVOS

Two high-torque servos are on mounted on the chassis—one to work the steering and the other, the throttle and brake. They produce a claimed 144 oz.-in.

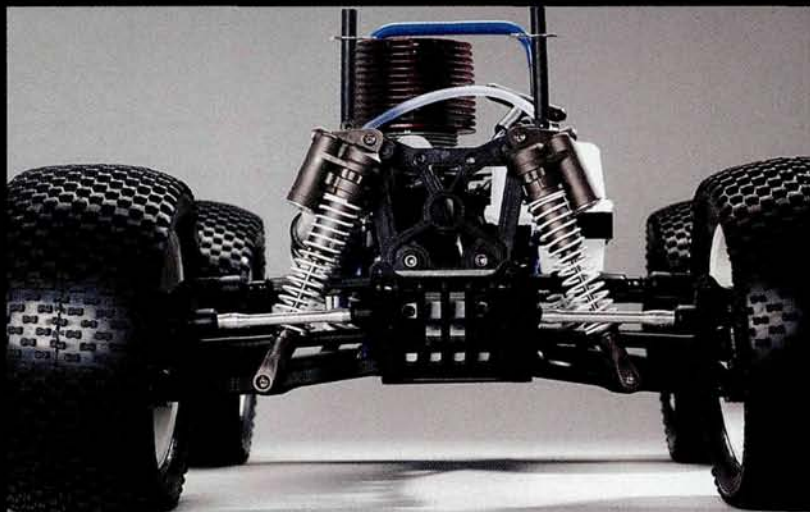
such as a 23mm box wrench and hex wrenches are in the box to help you with any repairs. You also get a fuel bottle to help you to fill the tank.

fins in the bottom to further reduce the engine's operating temperatures. The Nemesis' big engine drinks a lot of fuel, and that's why CEN included a 220cc fuel tank; it has molded-in baffles to reduce fuel sloshing and keep more fuel towards the pickup. It also has a built-in fuel filter, a large opening and a spillway that directs fuel overflow out at the bottom of the tank.



Left: the four vented disc brakes do a good job, but if you hit them too hard, the rear will come off the ground.

Right: the Nemesis' wide stance makes it stable on the track. See the handle barely showing above the engine head? It protects the engine when the truck flips.



SPECIFICATIONS

MANUFACTURER CEN RACING
MODEL Nemesis
SCALE 1/8
PRICE \$580
Varies with dealer

DIMENSIONS

Wheelbase 15.6 in. (397mm)
Width 18.4 in. (467mm)

WEIGHT

Total, as tested 258 oz. (7,326g)

CHASSIS

Type Stamped blue-anodized
Material 3mm 6061 aluminum

DRIVETRAIN

Type Enclosed gearbox w/steel gears

Primary 21T clutch bell/43T spur gear (1st), 25T clutch bell/39T spur gear (2nd)

Transmission ratio 2.88:1

Final drive ratio 10.1:1 (1st), 7.7:1 (2nd)

Driveshafts Rebuildable universals

Differentials Sealed 6-gear bevel units

Bearing type Metal-shielded ball bearing

SUSPENSION

Type Lower H-arm w/upper wishbone

Shocks Plastic body w/functional reservoirs

WHEELS

Type "50 Series" dish w/23mm hex drive

TIRES

Type "50 Series" Sniper

ENGINE & ACCESSORIES

Engine CEN NP76 .46 pull-start w/slide carb and rear exhaust

Clutch 4-shoe composite

Manifold Aluminum w/protective silicone sleeve

Pipe Multipiece tuned

Fuel tank Primerless 220cc w/internal filter

ELECTRONICS

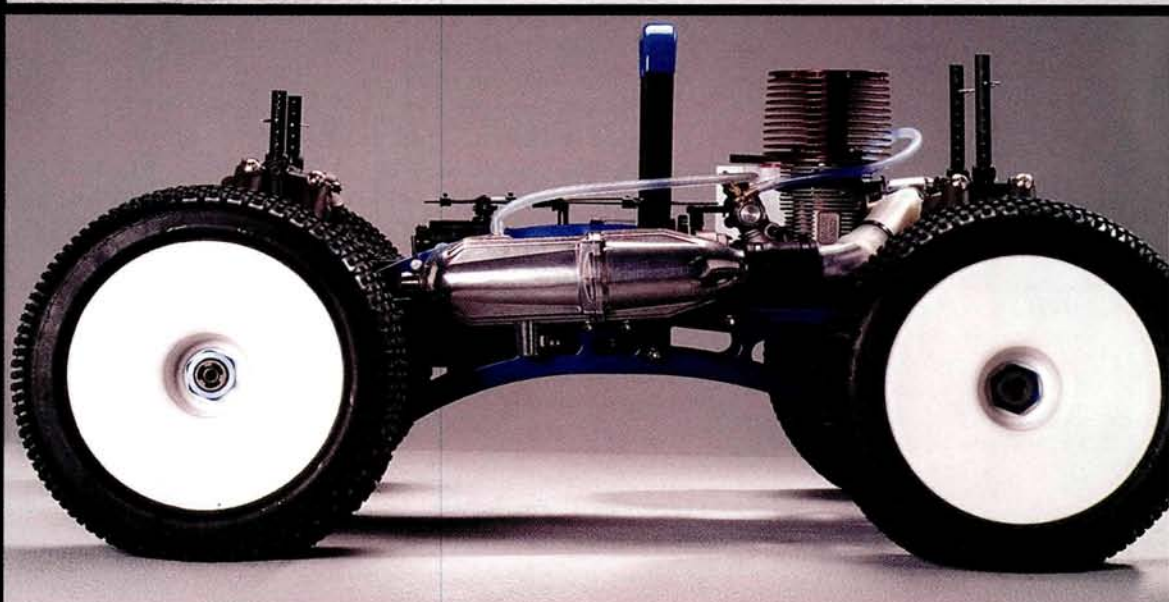
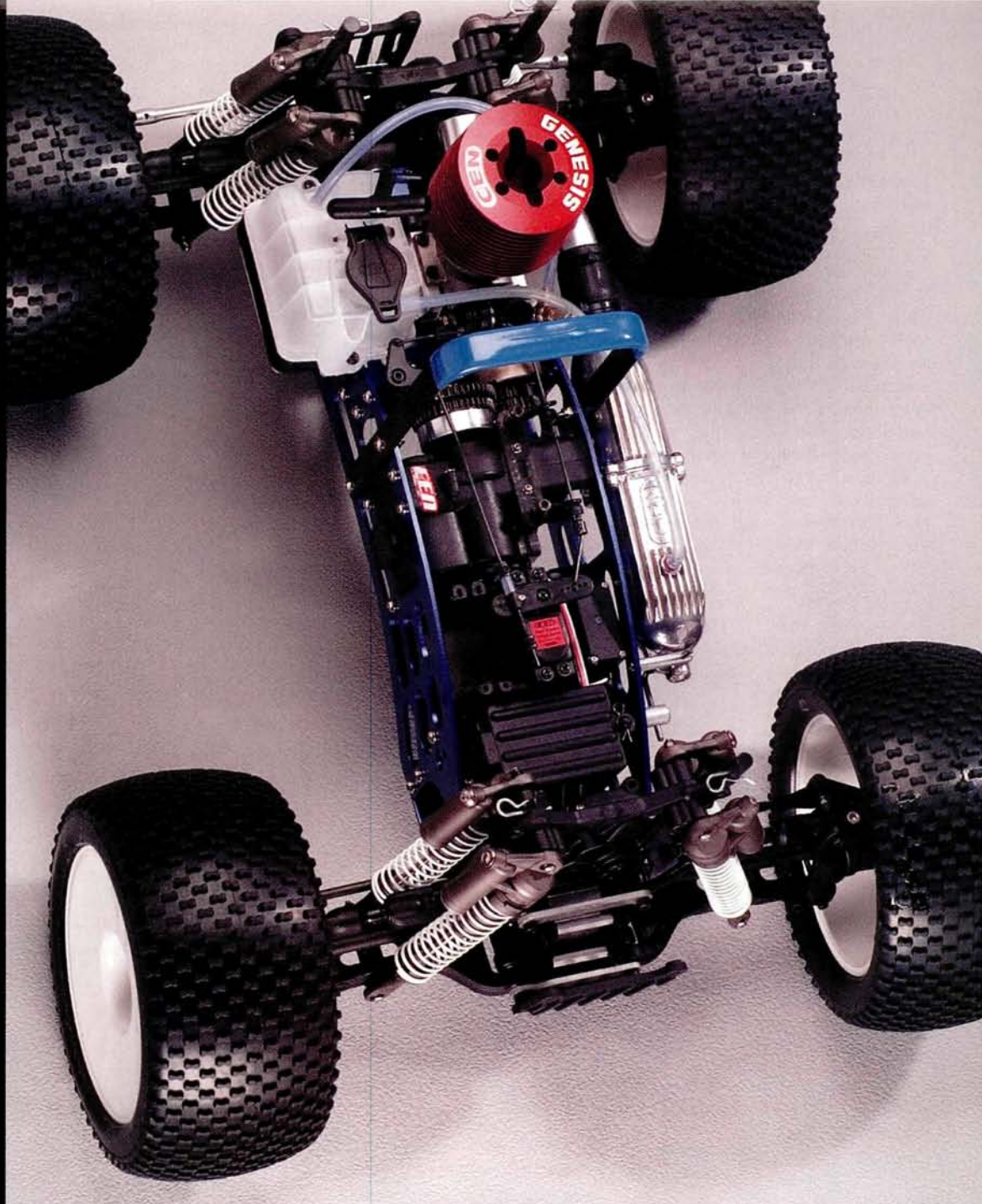
Transmitter/receiver

Airtronics MX3

Servos CEN G82122

Receiver pack AA 4-cell (batteries not included)

With its massive 132mm tires and arched chassis, the Nemesis has ground clearance to spare.



CEN Genesis Limited Edition

The Nemesis isn't CEN's only new monster. Take a look at the Genesis Limited Edition (LE) monster. It's all about backyard bashing and carries over some of the same features as the Nemesis plus a few others that will make it more fun for the backyard. The Genesis LE has a special silver-painted and trimmed truck body, and the chassis and grab handle have red accents instead of the blue found on the Nemesis. On the Genesis, the reversing tranny really stands out; it's great for when you get the truck stuck. Just hit the button on the radio and back up and out of trouble—no need to try to keep the engine running while you walk over to turn your truck around. The LE's 3-speed tranny really makes things interesting; when it hits third gear, consider it gone. The treads on the tires are also better for the yard because they get a good grip on just about any type of surface.



TUNING

IPS

INSPECT THE TRUCK

With any RTR vehicle, check it before you run it; make sure that all the screws are tight, that every part is where it should be and that the radio is set up properly. They're built by humans, and we make mistakes. The carb on my engine wasn't tightened all the way; all it took was a twist of the cinch bolt to solve that problem.

AFTER-RUN MAINTENANCE

When you've finished running the truck for the day, make sure that you empty all the fuel out of the tank, and run the engine to get rid of the fuel that's left in the fuel lines and carb. Once you have done that, put a drop or two of oil into the carb, and turn the engine over a couple of times to disperse the oil throughout the engine and to prevent the bearings and crankshaft from rusting.

EASY TUNING TIPS

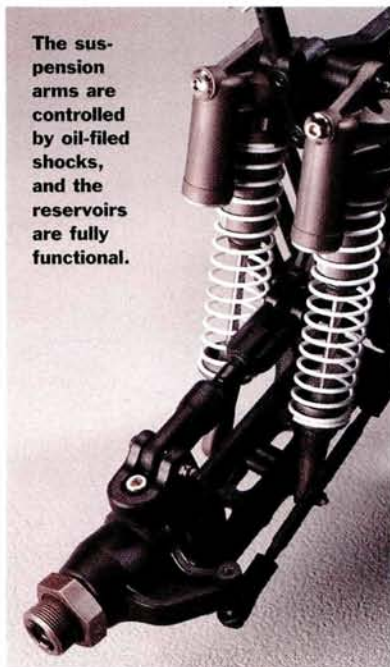
When you tune the engine, start with the high-speed needle. Tune the engine so it runs in the 250 to 270rpm range. Running richer cools the engine, and leaner makes the engine hotter. Once you've set the high end, you can tune the low-speed needle. Drive the truck to clear out the engine, and then pinch the fuel line right away. The engine should run for a second or so before the rpm slowly rise and then fall as the engine dies. If the engine shuts down any faster, the needle has been set too lean, and if it takes a relatively long time to die, the needle has been set too rich. Adjust the idle screw accordingly. You don't want the idle to be so high that the clutch is engaged, and you don't want it so low that the engine shuts off.

SUSPENSION AND STEERING. The independent suspension system consists of a fixed-length, molded-plastic lower arm and an adjustable, molded-plastic upper arm that allows you to alter camber with a twist of a wrench. For strength, an aluminum brace ties the outside of the upper and lower inner hinge pins together. In each lower arm, CEN gives you the choice of three mounting holes for the bottom of each shock.

The Nemesis' independent suspension has 8 oil-filled shocks (the Genesis has 10); using 8 shocks reduces weight. Short sections of fuel tubing on the bottom of each shock shaft soften the blow when the shocks bottom out, and white springs support the weight of the chassis. Molded-plastic clips of various sizes are used to adjust the Nemesis' ride height, and the shocks pivot on large-diameter steel balls on the shock tower and suspen-

sion arms. The reservoirs are functional units that smooth shock operation by giving the oil a place to go when it's displaced by the shock shaft. The molded front and rear shock towers hold the top of the shocks and double as attachment points for the body mounts.

The suspension arms are controlled by oil-filled shocks, and the reservoirs are fully functional.



BODY, WHEELS AND TIRES. The CEN body looks very similar to Pro-Line's Crowd Pleazer, and it will come painted, trimmed and mounted. Right now, the paint scheme hasn't been decided so CEN sent a body painted by Lucky's Paint.

Look at the wheels, and you'll immediately notice how big they are. They're CEN's "50 Series" (that's 132mm to you and me), and they're spun by 23mm hexes. The low-profile sidewall tires are much more track-worthy than the

Genesis' chevron tires. They come glued to the rims and are supported by foam inserts.

LIKES

- › Gigantic engine.
- › External 2-speed tranny.

DISLIKES

- › Suspension is a little too stiff.
- › Sluggish steering and engine.

YOU'LL NEED

Fuel
Glow-starter



WE USED

Sidewinder Back Yard Basher 20%
Du-Bro Kwik Klip



I decided to test the Nemesis at Wolcott Hobby & Raceway because of its varied terrain. There's a large track and a field with dirt piles, rocks and other obstacles. When I pulled the starter cord, I noticed that the engine had a lot of compression, so I loosened the glow plug to relieve the pressure inside the combustion chamber because I didn't want to break the pull-starter. It took only a couple of tugs to start the engine; holding the truck off the ground I slowly worked the throttle to warm the engine before tuning it. I tweaked the needles until the engine ran as I wanted it to. Soon, however, it started to give me trouble, and my smile disappeared as I did the walk of shame out to the truck to re-start it. Well, I found that the engine does run better when you tighten the glow plug after you've started the engine! I tightened the glow plug, started the engine and since it was then running well.

I dropped the hammer. The Nemesis flew down the straight and quickly shifted into second gear. I felt that the shift was a little too early, so brought the truck back for a quick adjustment, which was easy, thanks to the easy-to-access 2-speed clutch. I adjusted both screws an $\frac{1}{8}$ turn and hit the straight again. This time, I stayed happy. I squeezed the brakes for the turn at the end of the straight and almost flipped the Nemesis over. These brakes are strong! I didn't bother to adjust the brake throw because I prefer brakes that grab strongly because I know they'll do the job when I need them to. I did adjust brake bias because I wanted more rear

brake than front brake to help get the big rig around the track's tight turns—a good plan, considering that the truck's low-speed steering is very sluggish, but that's to be expected when you have a 16-pound truck with large-diameter tires. After a couple of laps, I was able to get around the slow, tighter sections of the track by turning early and goosing the brakes to slide the truck around. When making high-speed turns, the truck carried good speed, and that helped to make up the time lost on the slower sections. The Nemesis jumps well and stays level most of the time, but during the

few times when its nose was down, it took a lot of throttle to get it back up before the landing. The engine is not as responsive as the smaller, higher-revving engines that I'm used to. It has the power to get the front end up, but it takes a little while to get there. Landings are smooth and predictable, so after every jump, I was able to get back on the gas right away. Some of the smaller bumps tripped the truck up because of its stiff shock setup, and I had to make small left and right steering inputs to keep the truck between the pipes. After some track time, I made my way to the rock pile and had a blast. The truck threw rocks everywhere while it made its way over it. As I played around with the truck, my smile grew, as it ran over anything I could get the tires on. After running through a tank of fuel, I shut the truck down and inspected it for damage but even though a lot of weight had been thrown around, everything was OK.

RATINGS

Instructions	●●●●●●●● NA	No instructions were supplied with our test sample.
Included electronics	●●●●●●●● 3.0	The Airtronics radio has everything you could want, and the servos produce great power.
Parts fit & finish	●●●●●●●● 3.0	The fit and finish of the parts are good, but I wish the anodizing was more attractive.
Turn-in	●●●●●●●● 3.0	The steering response is very sluggish, and you have to set up your turns early to make them tight.
Corner speed	●●●●●●●● 3.0	The tires' large footprints allow you to carry good speed in the turns, but I would like it to be better.
On-power steering	●●●●●●●● 3.0	Just like most monster trucks, it pushes when on power.
Braking	●●●●●●●● 3.0	The brakes are awesome; the servo had no trouble locking up the tires.
Bump handling	●●●●●●●● 3.0	The shocks are a little too stiff. The small bumps tripped the truck up and made it a bit of a handful.
Jumping	●●●●●●●● 3.0	Jumps well, but if its nose is a little low, you'll struggle to get it up because the engine feels "sluggish."

Best buyer>>> Bigger-is-better believers with an appetite for performance

ADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 5.39	5.4 SEC.	29.32 MPH
2 SEC. > 20.54		
3 SEC. > 44.31	Time to top speed	Top speed
4 SEC. > 76.22	8.58 SEC.	36.91 MPH
5 SEC. > 115		

THE COMPETITION

VEHICLE >> REVIEWED
 Team Associated MGT >> 12/03
 Team Losi LST >> 11/04
 Tamiya TNX >> 09/04
 Traxxas Revo >> 06/04

THE VERDICT

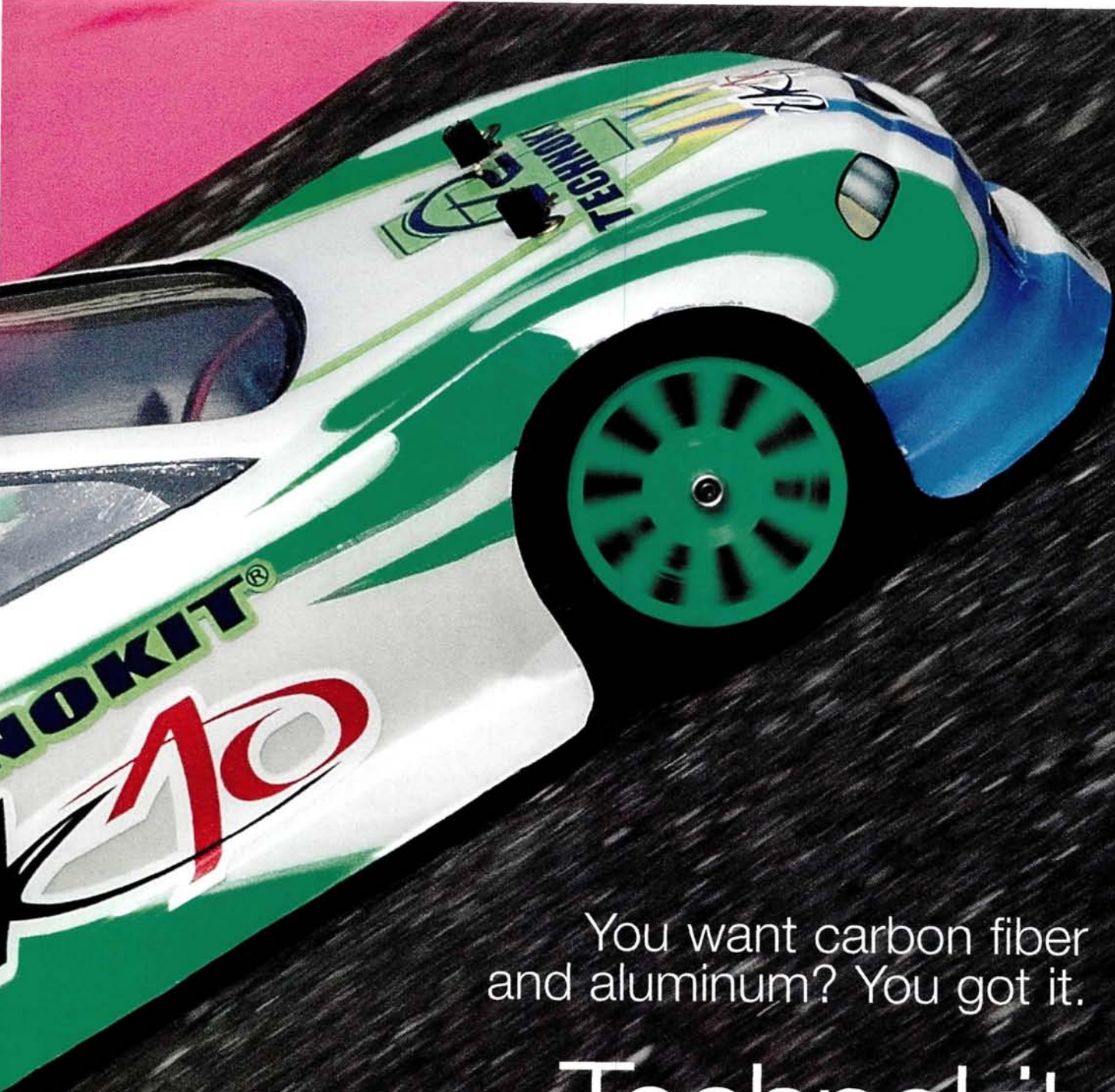
If you're looking to have the biggest truck on the track, the Nemesis is the one to have; the size of its engine alone is enough to scare any competitors. It might sound dumb to some of you, but I love being able to adjust the 2-speed without struggling to see through a small hole in the side of the tranny case; it's right out there in the open. It's a pretty nimble truck for its size and weight, and it feels good on the track. This truck is perfect for the guy who wants to have something to bash around in the backyard and run laps with same truck at the local racetrack. ■

FIND IT

>>> Go to page 243 for manufacturers' contact information

WHEN YOU HEAR THE NAME TECHNOKIT, you might automatically think 1/5-scale cars, but the company also manufactures 1/8- and 1/10-scale on-road rockets. Its 1/10-scale TK10 is one of the baddest sedans to ever hit the tracks. It looks great, thanks to the extensive use of aluminum and carbon fiber, and once you examine the car more closely, you'll instantly see that its construction and adjustability reflects its racing potential. With features such as an adjustable clutch-type 2-speed, Centax clutch, threaded shocks and low-CG layout, you can't go wrong. Let's see how good this European-born sedan is.





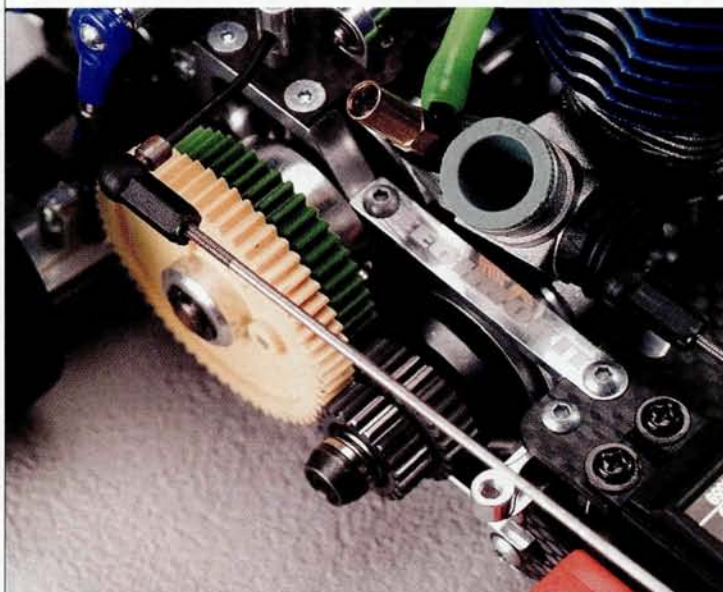
You want carbon fiber
and aluminum? You got it.

Technokit
10

KIT FEATURES

CHASSIS. The TK10's 3mm-thick aluminum chassis features a polished finish that smoothes out its edges and enhances its looks. Openings under the front and rear pulleys keep debris away from moving parts by allowing it to fall out of the chassis. The receiver pack is mounted on a carbon-fiber plate that sits flush with the bottom of the chassis to keep the car's CG as low as possible. Carbon fiber and machined aluminum make up the front and rear bulkheads, and the upper deck and the front and rear body mounts are made only of carbon fiber. Small flat-head screws secure some of the carbon fiber and aluminum to make one part. The aluminum pieces have no sharp edges and have a nice tumbled finish.

DRIVETRAIN. A Centax-style clutch spins the drivetrain, and it has small cutouts in the outer disc that help cool the clutch when it's disengaged at idle. You can adjust the clutch's spring tension to change engagement without taking the engine or clutch out of the car. The clutch bell meshes with a clutch-style, 2-speed transmission that is also easy to adjust; just quick twists of two screws are all it takes. The vented, disc brake



The TK10 uses a clutch-type 2-speed tranny to get it around the track, and the power gets to it through a Centax-style clutch.

BUILDING & SETUP TIPS

THREAD-LOCK

This car has many machine screws, and if you don't apply thread-lock before you install them, engine vibrations will make your car fall apart. The blue stuff is all you need; green is too weak, and red is way too strong.

PIVOT BALLS

When you install the retaining caps for the pivot balls in the hubs, make sure that you don't over-tighten them. If you do, they will bind the balls and, ultimately, your suspension. I like to snug them up and position the threaded section of the pivot balls so that they're perpendicular to the hubs. Then I

loosen the retainer slowly and stop as soon as the pivot ball falls.

2-SPEED

Before you install the adjustment screws on the 2-speed tranny, make sure that you mark them with two different bright colors of paint so you can easily distinguish them when you set the assembled 2-speed.

SET THE RIDE HEIGHT CORRECTLY

When you set the car's ride height, use a ruler or pair of calipers to make sure that the threaded collars on the shocks in each set (front and rear) are set the same.

consists of two ground-steel discs that have a machined-aluminum piece between them that scoops air in to cool them. The TK10's three-belt system gets power to the front and rear wheels; the rear belt spins the externally adjustable ball diff, a long side belt connects the front of the car to the main shaft, and a small belt drives a one-way assembly in the front. As far as driveshafts go, the front has rebuildable universals, but you'll find standard-issue dogbones in the rear. Machined-aluminum clamping hexes drive the wheels, and when you pull wheels off, they stay on the axle, and your drive pins won't fall out.

ENGINE AND ACCESSORIES. When it comes to an engine header and tuned pipe, the choice is left to you. I recommend that you not skimp in this area because this is a serious race car, and it should be equipped with high-end gear. A 75cc fuel tank sits just in front of the engine, and it features a large opening, a cap-mounted pressure nipple and an internal fuel filter. The fuel

mini test

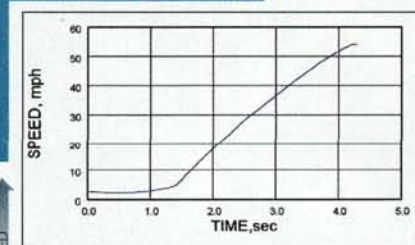
Rex LR5 engine

Sometimes a car is only as good as the engine that powers it, and the TK10 would be nothing without a high-end racing engine. My choice for the powerplant is the REX 12LR. The engine is available in 3-port and 5-port versions, and I dropped the 5-port into my sedan. It uses ABC construction and has features such as a knife-edge conrod, multi-fin turbo-plug head and 2-needle slide carb. The piston is manufactured by a method called microcasting; developed by Novarossi, it's supposed to make the piston lighter and maintain better compression at high temperature. The engine puts out a claimed horsepower of 1.64hp, and the revs peak out at 43,800rpm. You can see that power when you nail the throttle; the car is a rocket. The engine was a little finicky to tune at first, but I was able to get it dialed in with some fine-tweaking of the carb.

Speed and acceleration will vary with gearing, vehicle, fuel and test conditions



RADAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. > 3.33	4.12 SEC.	53.1 MPH
2 SEC. > 15.7		
3 SEC. > 56.86	Time to top speed	Top speed
4 SEC. > 122.7	4.26 SEC.	54.17 MPH

SPECIFICATIONS

MANUFACTURER Technokit
MODEL TK10
DISTRIBUTED BY Internet RC
SCALE 1/10
PRICE \$716
Varies with dealer

DIMENSIONS

Wheelbase 10.25 in. (260mm)
Width 7.9 in. (200mm)

WEIGHT

Total, as tested 68 oz. (1,910g)

CHASSIS

Type Machined polished plate
Material 3mm 6061 aluminum
with 2mm carbon-fiber
upper deck

DRIVETRAIN

Type Triple-belt
Primary ratio 21/58 (first),
27/53 (second)
Transmission ratio (F/R)
1.58:1/2.53:1
Final drive ratio (F/R)
4.66:1/7.08 (first), 3.11:1/
4.96 (second)
Driveshafts (F/R) Universal/
dogbone
Differentials (F/R)
One-way/adjustable ball
Bearing type Rubber-sealed
ball bearing

SUSPENSION

Type (F/R) Dual A-arm/lower
H-arm with upper link
Shocks Threaded, aluminum-body

WHEELS

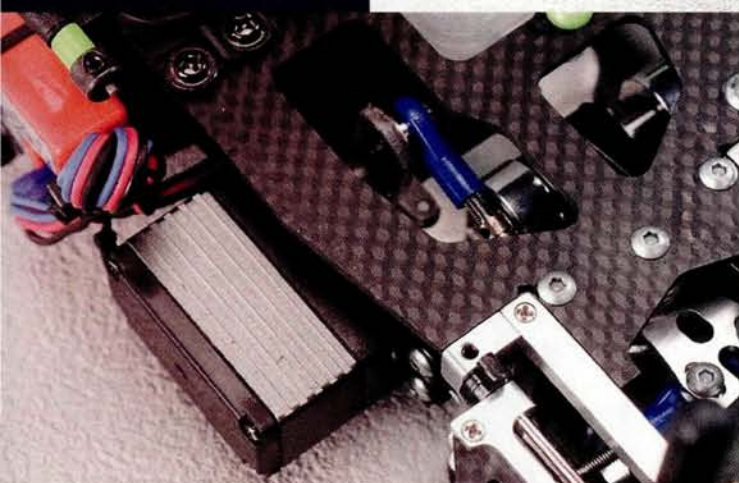
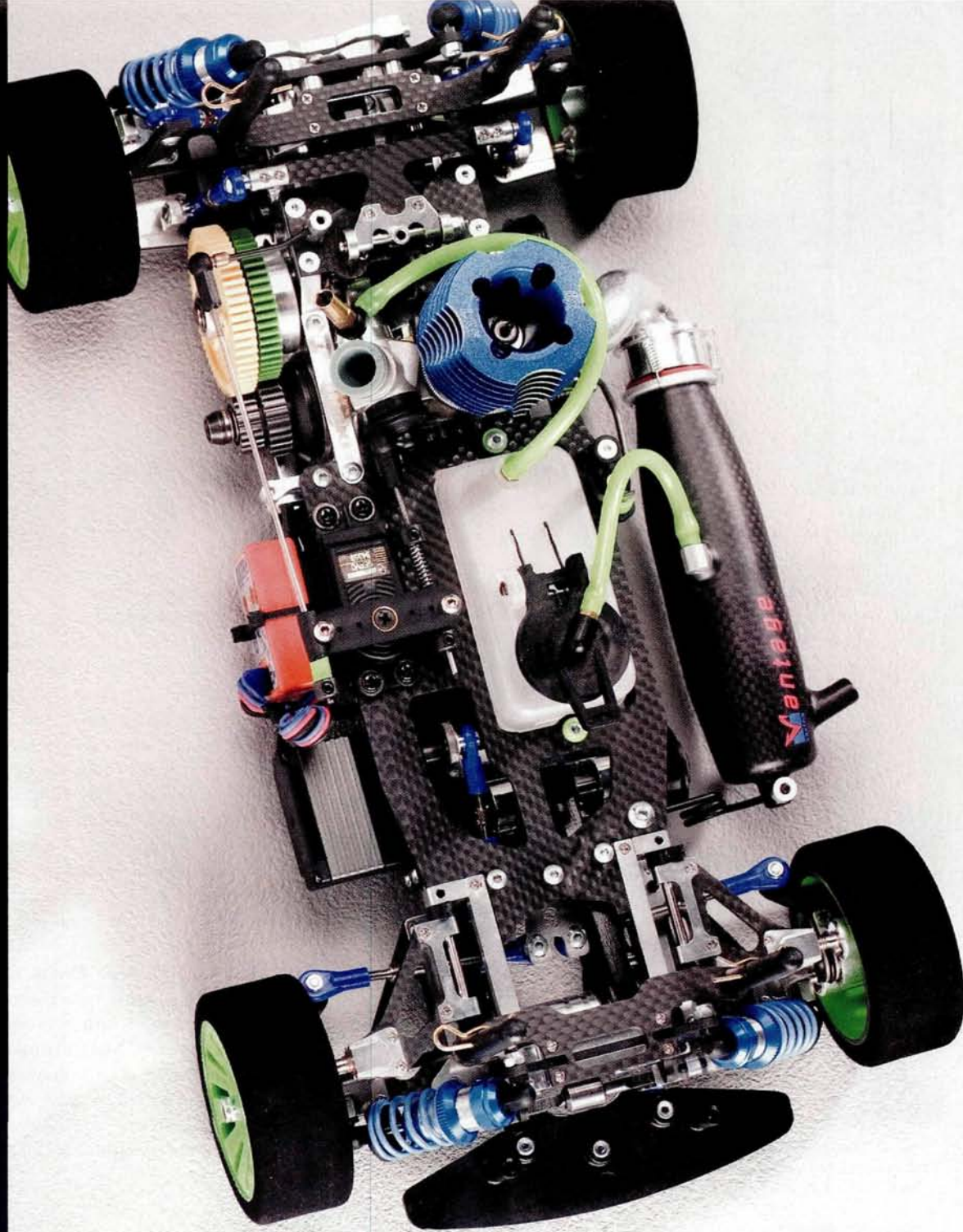
Type Multi-spoke plastic

TIRES

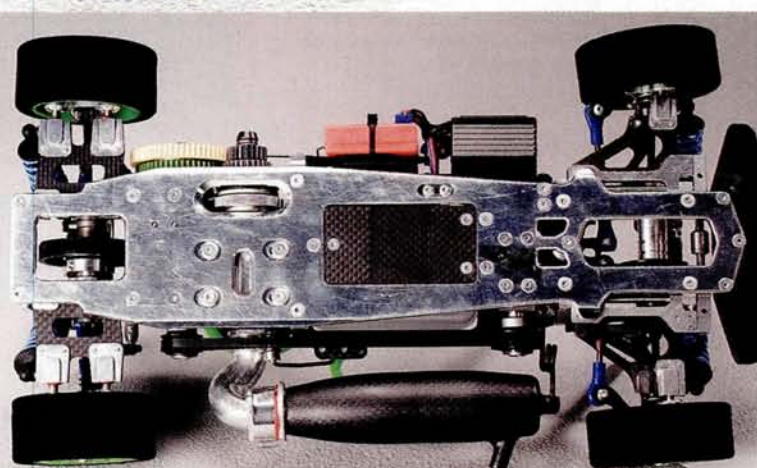
Type Foam with 42-shore rating

FACTORY OPTIONS

- 4mm chassis—item no. A2701
- Carbon-fiber front swaybar—
A2713
- Front ball diff—A2715



The steering servo is mounted in a laydown position below the carbon-fiber upper deck to keep the car's CG as low as possible.



The bottom of the chassis looks just as nice as the top side. All the edges are supersmooth, and it has a polished finish.



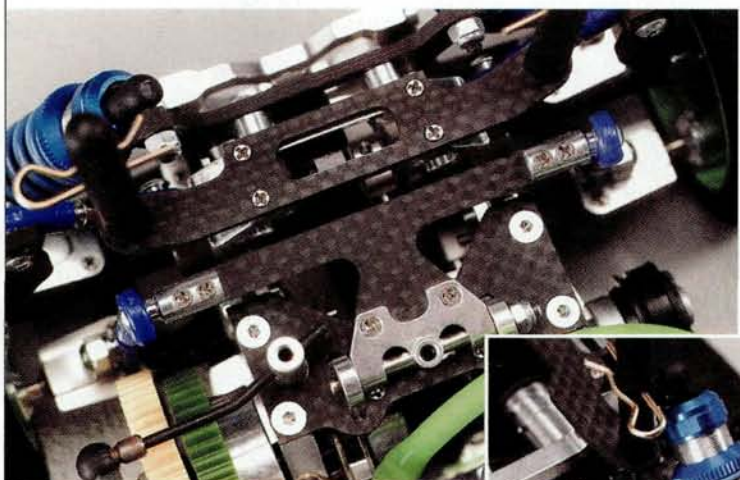
pick-up is at the lowest spot in the tank to ensure that it picks up every drop of fuel. Rubber grommets isolate the tank from vibrations to reduce fuel foaming.

SUSPENSION AND STEERING. The TK10's independent suspension has a unique feature that makes it stand out from those of other nitro sedans. The suspension arms are made of carbon fiber and aluminum; the carbon fiber is sandwiched between the aluminum sections, and everything is held together with small screws. Even the steering arms on the front hubs and the link mount on the rear hubs are made of carbon fiber. To adjust front

camber, you move small molded clips on the inner upper hinge pin and toe; camber and width can be adjusted with the pivot balls in the front and rear. The front ball-and-cup swaybar is adjustable, but the rear carbon-fiber and aluminum setup isn't. The lightweight carbon fiber is cool-looking, but this setup's durability concerns me. These cars are pretty fast, and those arms are going to take a beating if the car hits the boards.

The threaded, aluminum shocks are available in two finishes: polished and anodized. A knurled nut allows you to adjust ride height, and shock angles can be adjusted by moving the tops of the shocks to one of the two holes in the front of the car and to one of the three in the rear.

BODY, WHEELS AND TIRES. Unlike many pro sedans, the TK10 comes with race-ready rubber and a body. Technokit foam tires with a 42-shore rating provide the grip while the multi-spoke rims provide the looks. Technokit includes a race-inspired Alfa Romeo Lexan shell that comes with window masks, overspray film and stickers. I wanted my car to stand out from the rest, so I shipped the body off to Zegers RC Graffix.



Above: the rear swaybar used on the TK10 is constructed out of carbon fiber. It looks cool, but it isn't very adjustable.

Right: the suspension is very unusual for any car. It uses aluminum and carbon-fiber construction that is held together by small screws.



LIKES

- > Ultra-exotic 100-percent carbon-fiber and aluminum construction.
- > Clamping hubs.

DISLIKES

- > Nonadjustable rear swaybar.
- > Fragile.

FIND IT

>>> Go to page 243 for manufacturers' contact information.

THE COMPETITION

VEHICLE >> REVIEWED
 Serpent 710 >> 9/04 (RC Nitro)
 HPI R40 >> 12/03
 RDLogics Mongoose >> 7/05 (RC Nitro)
 Team Associated Nitro TC3 >> 8/04
 Kyosho V-One-RRR >> 2/05

TECHNOKIT TK10

YOU'LL NEED

WE USED

Radio	Airtronics M11
Servos	Airtronics 94359Z
Receiver pack	Trinity 1200 Plus
Engine	Rex R12 LR5
Fuel	Trinity Nitro Power Platinum 20%
Pipe	Vantage SE120L-17 tuned pipe
Tires	Technokit A2811/42
Body	Technokit Alfa Romeo





PERFORMANCE

A car like this is meant to tear up the track, and that's exactly what I did during testing. I broke in the engine before I went over to the track so that I could put the power down right away and not have to worry about straining the engine. The layout had large sweeping turns and long straights, so I knew that this car would have good speed on all sections of the course. It wasn't long before a couple of guys started hanging out in my pit to check out the car. They were just as excited to see it go as I was.

I made some final checks of the radio and car before I placed it on the track and then hammered on it. Clutches on other high-end touring cars that I have tested engaged a little too late for my liking, but I was happy with the TK10 right off the bat: it engaged well with no signs of slipping. The car tracked straight with every pull of the trigger, and it looked like it was attached to a slingshot as it rocketed from corner to corner. I kept over-shooting the corners for the first couple of laps until I got used to the car's acceleration. The chassis stayed flat when transitioning into the corners, and no corrections were needed to keep the rear end from washing out. The more laps I had with the car, the more comfortable I was, and my speed in the corners picked up a lot by the end of the day.

I was happy as I entered the straight: the car took off out of the

corner well, and when the 2-speed kicked in at about a third of the way down, the car just checked out. I had no trouble hanging with the local fast guys from the beginning to the end of that section of track. I did, however, bring the car over and adjust the 2-speed so that the car shifted a little earlier, and I was able to pick up a little more speed at the end of the straight. Braking on the car was smooth and consistent, but that's all I can say because I didn't have to use the brakes very much on the course that I was testing on.

When I first got on the binders, I spun out; I had set them up a little too tight before heading out to the pavement. I was able to fix that quickly by lowering the brake throw on my radio. One of my main concerns was the durability of the suspension arms. The TK10 is very fast around the course, and when you crash at speed, the pressure that is applied to the suspension arms is up there. Of course, when driving a car around a track for the first time, you have to get used to the car's performance and the track layout; it's only a matter of time before you slam the car into the boards. Well, I lightly tapped the wall a few times, and the suspension arms held up, but at one point, I wasn't paying attention and cut a corner too sharp and that was the end of the right front suspension and my day of racing.

THE VERDICT

The suspension held up fine when taking light hits off the boards at lower speeds but not at a higher speed. Any time you put a car into a non flexible board on a track you're going to break something but it seemed like the suspension arms are a little too fragile. The carbon fiber arm idea is cool but I would prefer to see

molded arms that have a little flex in them on the car instead. The car does handle well and the car felt great on the track. Because of its complicated construction, I don't recommend this car to beginners, but someone with some building experience shouldn't have too much trouble assembling it. ■

RATINGS

Instructions	●●●●●●●●●●	■	The instructions have nice drawings, but the included text is a little shady.
Parts fit & finish	●●●●●●●●●●	□	Did you look at the photos? Everything looks great and fits together well.
Turn-in	●●●●●●●●●●	■	I was able to carry a lot of speed when entering the turns.
Corner speed	●●●●●●●●●●	■	Not much of an issue here; the TK10 carries speed well.
On-power steering	●●●●●●●●●●	■	I noticed only a slight push when on power.
Braking	●●●●●●●●●●	■	Braking was a bit sketchy, thanks to the one-way front end.

Best buyer>>> Advanced builders and racers who want to get around the track in a hurry.

Kyosho builds an even hotter Inferno

THE MP777 SPECIAL 1 (SP1) BUGGY has been in hobby shops for only a year, but Kyosho has already released a new, updated version dubbed the "Special 2" (SP2). I have a lot of wheel time with the SP1, and just like you, I wondered how Kyosho's engineers could possibly improve it. As the saying goes, there's always room for improvement, and it seems as if Kyosho has a way of finding that room. The rear shocks are longer (how much longer can these things get?), the wheelbase has been extended for better bump handling, and the engine and diff have been moved to increase stability. We're talking millimeters here, but they can potentially add up to a lot more distance between you and the second-place guy. The key word there is "potentially"; we'll let the lap times tell us what the SP2 can really do.





Kyosho
INFERNO
MP777
SPECIAL 2

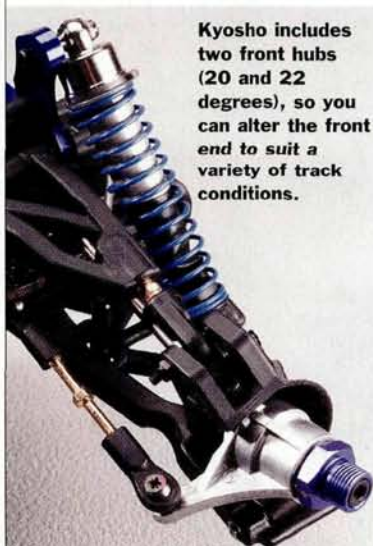
KIT FEATURES

CHASSIS. The SP2's hard-anodized chassis is stamped out of 3mm 7075 aluminum plate and has radiused sides to increase its stiffness. To reduce its weight, the chassis has numerous shallow reliefs machined in its top. The SP1's deck was only relieved under the engine and the clutch bell, so it was heavier. Like all Kyosho buggies since the MP-7.5, the chassis also has stamped recesses under the differentials that allow the ring gears to sit below the top of the chassis for a super-low CG. It's appreciated, but the chassis could have had an even smoother bottom had Kyosho machined the recesses in the chassis along with the other reliefs instead of stamping them. The chassis' size and layout differ subtly from the SP1's; if you look at the side-by-side photos, you'll see that the SP2's engine and center diff are 1.5mm farther back, and the chassis is 4mm longer. The radio tray has also been changed a little; all the screw holes have been countersunk; this looks cleaner and, more important, it makes the assembly stiffer. Steel-rod braces lend extra support. They aren't as fashionable or as rigid as solid aluminum "girder" braces, but the torsional flex-rod braces often help handling and doesn't hinder it.

DRIVETRAIN. The SP2's differentials are sealed and silicone-filled, of course, and all three have identical 6-gear internals—no more Traction Control Differential up front. A single vented and ground disc brake pulls the reins on the buggy's front and rear end. Brake bias is easily adjusted by twisting the small collars that are mounted on the front and rear brake linkages. Chrome-plated-steel universal driveshafts connect the center diff to the front and



There are two vented and ground steel disc brakes, and you can adjust front and rear brake bias to fine-tune the braking to your liking.



Kyosho includes two front hubs (20 and 22 degrees), so you can alter the front end to suit a variety of track conditions.

rear diffs; you'll also find chrome-plated-steel units driving the wheels. Metal-shielded ball bearings provide an almost friction-free ride to the drivetrain components, but you'll need to keep a closer eye on them, since they're unsealed (but, for the record, I've never had a problem with Kyosho's shielded bearings).

SUSPENSION AND STEERING

The SP2's independent suspension consists of a lower arm with an adjustable upper link to control the car going over

BUILDING & SETUP TIPS

The instruction manual for the SP2 is one of the best out there, and you won't have any trouble building this buggy. A few things that aren't mentioned will make your building experience better and make your SP2 perform better. These tips will hook you up:

STEP 1. When you assemble the three gear diffs, mark the housing so that you'll know which is the front, the center and the rear diff. The diffs are filled with silicone fluids of differing weights, and if you install a diff in the wrong place, it will adversely affect the buggy's handling.

STEP 2. It is very important not to forget to install the included diff gasket; if you don't, all the silicone fluid that you filled the diff with will end up in the chassis.

STEPS 3 & 14. Four thin shims are to be installed with the front and rear diffs. The

manual shows two on each side of each diff. If you have too much play between the ring gear and the pinion, put more shims on the gear side of the diff; if the gear mesh is too tight, you need extra shims on the other side of the diff.

STEP 9. When you install the rear upper camber links, make sure that you install the notched ball end in the rear hub with the notch facing upward. That notch will provide clearance for the swaybar.

STEPS 11 & 20. Don't over-tighten the two setscrews that support the rear swaybar. If you do, they will bind the swaybar and the suspension.

STEP 31. Kyosho includes two molded-plastic fuel-tubing holders to keep the fuel lines tidy. They're a pain to move around on the tubing, and I prefer to leave them in the box. I use small zip-ties to neaten the fuel lines.

bumps, and it all pivots on superstrong, steel hinge pins. The inserts that hold the front, upper and inner hinge pins in place can be inserted in different ways to allow you to adjust front roll center; in the rear shock tower, there are several holes that can be used to adjust roll center. C-hubs with 22- and 20-degrees of caster are included to allow you to fine-tune your suspension to your liking and to suit track conditions.

The SP2 uses very smooth, hard-anodized-aluminum shocks to control the suspension action, and the bodies are 3mm longer than the ones used on the SP1. The rear suspension travel seems to get longer with every new car that Kyosho produces. The rear shocks have longer springs that are better matched to the long-travel shocks. And check out the new shock towers! They are 5mm thick and have been machined in low-stress areas to reduce weight without reducing strength; and they have tons of holes for shock-angle tuning.



A plastic guard protects the tuned pipe's stinger.

SPECIFICATIONS

MANUFACTURER Kyosho
MODEL MP777 Special 2
DISTRIBUTED BY Kyosho America
SCALE 1/8
PRICE \$749
Varies with dealer

DIMENSIONS

Wheelbase 12.9 to 13.1 in.
 (327 to 332mm)
Width 12.1 in. (307mm)

WEIGHT

Total, as tested 123.5 oz.
 (3,501.2g)

CHASSIS

Type Machined plate
Material 3.5mm hard-anodized aluminum

DRIVETRAIN

Type Shaft-driven, full-time 4WD
Primary 13T clutch bell/46T spur
Transmission ratio 3.32:1
Final drive ratio 11.7:1
Driveshafts CV-type
Differentials Sealed, 6-gear, silicone-filled
Bearing type Metal-shielded ball bearings

SUSPENSION (F/R)

Type Lower A-arms with adjustable upper links
Shocks Aluminum-body, oil-filled coil-overs with 3.5mm shafts

WHEELS

Type Dish-type with slots

TIRES

Not included

ENGINE & ACCESSORIES

Engine Not included
Pipe Not included
Manifold Not included
Fuel tank 125cc

ELECTRONICS

Not included



Above: the rims have the strength of dish wheels, and the slots allow dirt to fall out instead of building up inside and throwing off the wheels' balance.

Right: The new air filter has an expanded metal mesh cage inside it to prevent it from deforming when the engine sucks in air. This results in a smoother airflow to the carb.



The radio tray can be removed as a unit, so it's easier to clean the car after it has been run. The transponder will accept a standard or a personal transponder.

Kyosho's Jeremy Kortz on the SP2

BY JASON SAMS

"With the weight of the engine moved back, the car is not as twitchy. The car is much smoother through bumps without sacrificing steering. The ass end doesn't hop around as much, and it's easier to drive. The details and final craftsmanship are even better—for example, the polished hinge pins, beefier shock towers, longer spring perches, shock-anchoring pins and milled chassis."—Jeremy Kortz

I was able to drive Kortz's SP2 for RC Nitro's Pro Buggy Shootout, and his car handled and jumped really well. I was shocked by how much steering his buggy still had—too much for me! This shows that the new platform and design don't sacrifice the 777's often talked about carving ability. Having put in a season of racing on an SP1, I was also impressed by the functional changes Kyosho has made—the SP2's longer rear shocks, altered weight distribution and extended wheelbase. These will help racers to finish at the front of the pack.

Steering is controlled by a dual-bellcrank system, and you'll find an adjustable servo-saver built into the right side bellcrank. The servo-saver uses a knurled collar to adjust the tension on the spring, and it's on the top of the bellcrank for easy access. The center link pivots on bushings, and holes on both sides allow you to alter the steering link's angle. Both bellcranks pivot on ball bearings to keep the steering super-smooth.

ENGINE ACCESSORIES. Like all pro racing buggies, the SP2 leaves the engine and exhaust-system selection up to you, but everything you'll need to install and feed it is in place. An aluminum 3-shoe clutch transfers the power of the engine to the drivetrain. The aluminum shoes slip less than the composite



shoes of Kyosho's past; they do, however, require more maintenance, but I'll take more maintenance for the harder acceleration any day. Finned mounts support the engine and are attached to sub-mounts that let you remove and reinstall the engine without having to reset the gear mesh. A 125cc fuel tank with a large internal baffle and high-wall spillway reduces fuel sloshing and fuel spillage. There's a filter attached to the pick-up in the tank, but Kyosho also includes a large-volume inline filter for extra engine protection (and it also increases fuel capacity; every drop counts). The SP2's air filter is new; a foam element still filters out the dirt, but the inside of the filter is supported by an expanded metal cage to help improve airflow.

BODY, WHEELS AND TIRES. The SP2's sleek buggy body has a window mask, stickers and overspray film to protect the outside when you paint it. Painting it is up to you. I sent mine to Neo Graffix; why ruin it before the photo shoot? Rims are included, but you choose the tires. For the SP2's pricetag, I'd really like to see a decent set of tires in the box. I picked up a set of TRC Cubics, since they work best at RC Madness where I usually test new cars. The rims are a cross between a dish- and spoke-wheel combo. Small holes drilled in the rims allow dirt to pass through them so that it doesn't build up inside the tires and unbalance the wheels; the dish part of the wheel is there for strength.

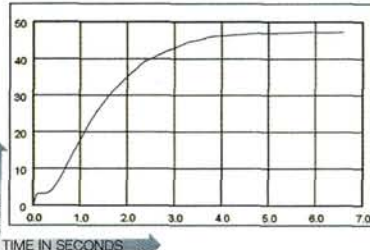
mini test

Novarossi P5

I decided to go with a Novarossi P5 for my SP2 because it has a claimed 2.7hp and a peak rpm of 31,000. I think that's plenty of power for my top-end buggy. It features ABC construction, and the fuel flows into the combustion chamber through a 5-port sleeve. A composite 3-needle carb controls the flow of air and fuel into the engine, and it comes with an 8mm insert. A large heat-sink head helps to dissipate engine heat and reduce its operating temperature; a standard plug and a turbo-plug button are available. The engine produces great linear power; it almost felt as if I had the world's most powerful electric motor bolted in.



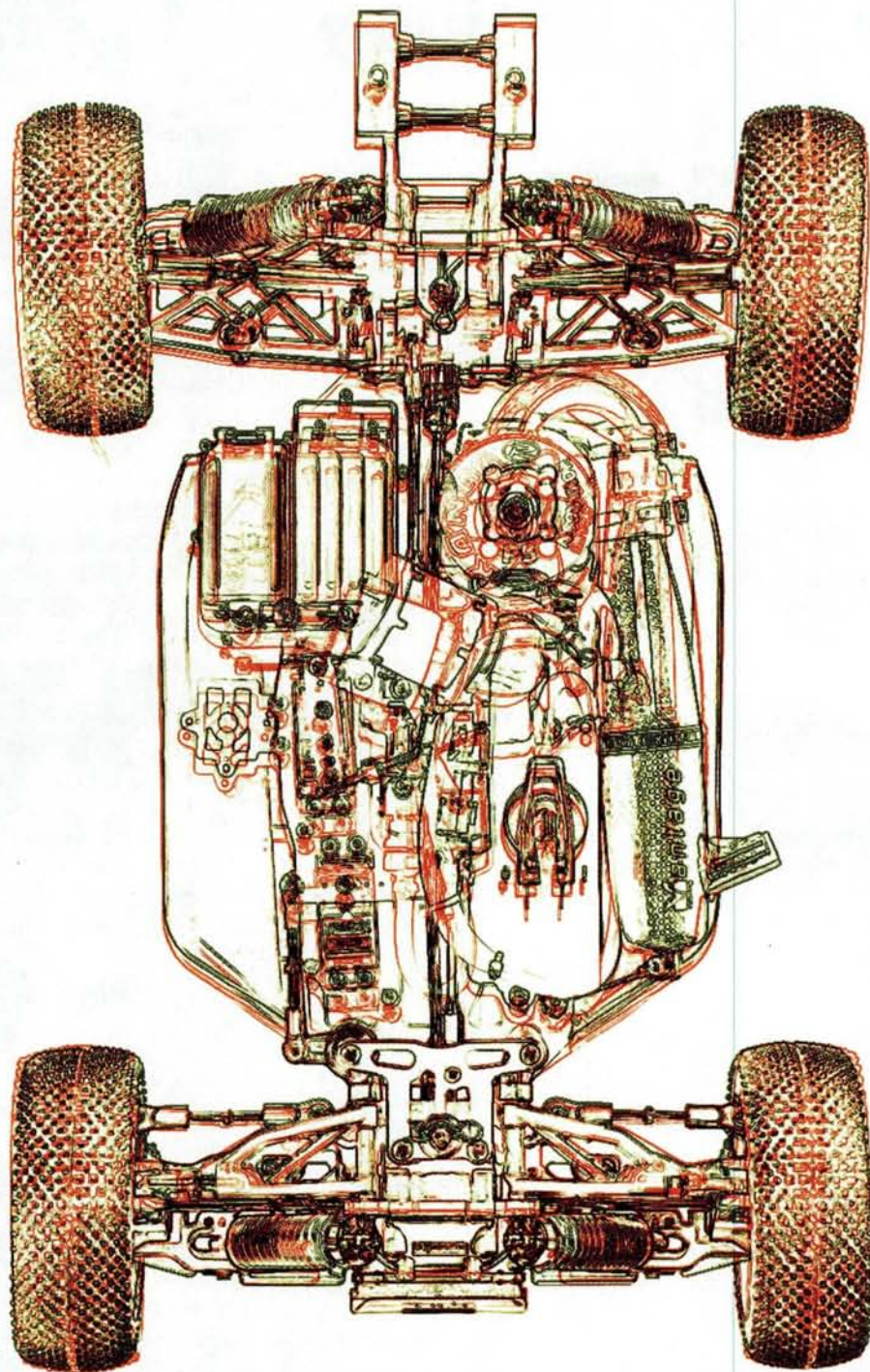
RAJAR TESTING



Distance (in feet) traveled in:	0-132 ft. time	Speed at 132 ft.
1 SEC. → 6.72	3.54 SEC.	44.84 mph
2 SEC. → 41.84		
3 SEC. → 97.76	Time to top speed	Top speed
4 SEC. → 162.7	6.59 SEC.	47 mph
5 SEC. → 230.4		

YOU'LL NEED	WE USED
Engine	Novarossi P5
Radio	Futaba 3PK
Servos	Futaba S9350
Tuned pipe	Vantage Racing carbon-fiber
Tires	TRC Cubics
Receiver pack	Trinity 1200mAh
Fuel	Trinity Nitro Power Platinum 20%
Glow starter	DuBro E/Z glow





This shows how much the rear of the car has changed. The chassis is longer, and the center diff and engine have been moved rearward. The SP1 is in orange while the SP2 is green.

LIKES

- › Exceptional steering; carves hard.
- › Blazing acceleration thanks to aluminum clutch shoes and overall low weight.
- › Excellent parts fit and finish.

DISLIKES

- › Tires aren't included.
- › Diff-clearance blisters on the chassis' underside are exposed to wear.

THE COMPETITION

INFERNO MP777 SP2

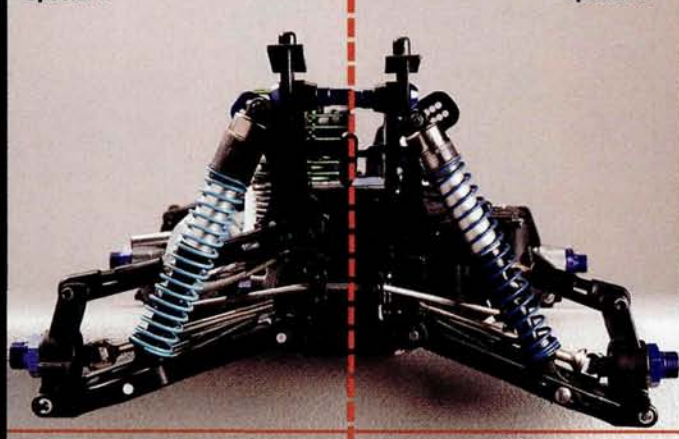
- Vehicle >> **REVIEWED**
 XRAY XB8 >> **11/04**
 OFNA Jammin' X1 CR >> **03/05**
 Mugen MBX-5 Pro Spec
 GS Avenger Storm Pro MKII >> **04/05**
 CEN Matrix
 TTR EB4 >> **04/05**

SP1 to SP2 changes

- The chassis is 4mm longer.
- The engine is 1.5mm farther to the rear.
- More chassis-lightening millwork has been done.
- Shock towers are 2mm thicker and milled.
- Both center universals are the same length.
- The rear shock shafts are longer for more downtravel.
- The air filter has an mesh cage to increase airflow.
- All the springs are longer, so you need fewer preload spacers, and there's less coil binding at full compression.
- The new hingepins are better polished for smoother suspension operation.
- The new, lower shock pins have larger heads and a flat spot for the setscrew.

Special 1

Special 2



The SP2's rear suspension is longer, and you can really get a feel for

Special 2

Special 1



The shock towers are much thicker and more durable than the ones used in

PERFORMANCE

My test track for the SP2 was RC Madness in Enfield, CT. It's home to many 1/8-scale buggies, and every weekend, you'll find fast drivers and challenging layouts that test your skills. Of course, I broke the engine in before I headed for the track so that I'd be able to head right out onto it when I arrived.

I was immediately impressed when I pulled the trigger, as the SP2 sped away with very little wheelspin and as straight as a pin; you can get on the throttle when the car is a little sideways, and that instantly straightens it out. As the straights fed into the turns, I found that the brakes work very well; they felt smooth and had good control all the way up to full lock. The front brakes grabbed a little too well, so I brought the car over to pit land and adjusted them to reduce front braking. It was an easy adjustment to make, thanks to the knurled collars on the threaded linkages: turn the collar toward the rear of the car to increase braking power; turn it toward the front to decrease power. After that, the car was more controllable when I got on the binders.

The track's small bumps caused the rear to bounce around a little too much. When driving through certain sections, it sometimes felt fine, but if I hit the same bumps again a lap or two later, the rear end washed out unpredictably. The included setup sheet calls for

50WT silicone fluid in the front and rear shocks; that weight might be good for smoother tracks but not for the Madness track. A lighter silicone fluid will allow the rear suspension to react faster to changes in the surface.

Jumping the SP2 couldn't be more fun. It took hardly any effort to get it to fly through the air, and it travels an impressive distance, thanks to its great acceleration. Over most of the jumps, I saw level flight, but it occasionally leapt into the air with a nose-down attitude that I corrected with a quick stab of the throttle. Landings were mostly smooth. I occasionally had a brain fart and didn't hit a jump correctly, and this made the car a little squirrely on landing, but I only had to nail the throttle to straighten it out.

It's scary to know that I could get more steering out of the SP2 by tweaking the front end. This buggy already has so much steering that I constantly cut the corners too early. I was expecting it to be a little sluggish, but for once, I was happy to be wrong. The car enters the turns off power with authority and with only a slight push; I could almost get on the throttle before it was halfway out of the turn. After a couple of laps, I had a feel for the car and didn't have any trouble hugging every pipe.

Second opinion

I wondered what others would think of the new car and its performance, so I gathered a few local fast guys to give them some wheel time after I had finished my laps. They drove the car with the box-stock setup so that they'd be able to judge its performance with Kyosho's setup suggestions. Here are their thoughts.

Rick Birk

> **Acceleration.** Acceleration was very smooth; the car tracked straight. If you got on the throttle when it was a little sideways, it straightened itself out. It took off out of the hole well with very little wheelspin.

> **Bump handling.** It handled the small bumps fairly well. I think if you change the shock oil in the rear, it would help quite a bit.

> **Jumping.** The car is well-balanced; you don't have to do a lot to correct it in the air. It traveled a good distance without much effort.

> **Steering.** The steering is very reactive; it has a lot more steering than any other buggy I have raced. I noticed a slight push when on power, but I think a little tweaking will eliminate that.

> **Braking.** The brakes were great once we had dialed in the front and rear bias. They didn't hang up when transitioning from braking to throttle.



Mark Smyka

> **Acceleration.** The car felt really good out of the hole; the harder you pull on the trigger, the straighter it goes.

> **Bump handling.** I felt that it wasn't the greatest out of the box. It needs to be a little lighter in the rear; it bumped around a little too much for my liking.

> **Jumping.** It's really good; it stays flat and straight. You don't have to hit the jumps hard to go a good distance.

> **Steering.** This thing has a lot of on-power steering. Off power is also great, and the second you get on the throttle, it pulls the car right out of the corner.

> **Braking.** The brakes were good after we had played around with them; I like to run a lot of rear bias. The brakes grabbed very well—almost too well, but I think they will feel better as they wear in.



Matt McCready

> **Acceleration.** The car puts the power down very well, and it tracks straight. I didn't feel the need to correct its attitude when on power.

> **Bump handling.** It was kind of rough; the rear end liked to kick out a lot. On-power, off some of the jumps, it tended wash out a lot.

> **Jumping.** The car flew very well; it seemed to be a little nose-heavy, but I don't know whether that was my driving or not.

> **Steering.** Off power, it was unbelievable—the most steering I've ever had in an 1/8-scale buggy. You can cut the corners really tight. I noticed only a small push when on power.

> **Braking.** The brakes are excellent; the car stops on a dime.



Matt Ciechowski

> **Acceleration.** The acceleration is good; the buggy tracks straight when you get on the gas.

> **Bump handling.** The car was pretty good over the bumps. I think it would have been better if the shock oil in the rear had been lighter.

> **Jumping.** It jumps far, and it's very predictable; you can pretty much tell how and where it's going to land. It's a well-balanced car.

> **Braking.** I wasn't too fond of the brakes at first, but they felt great after we had adjusted them.

> **Steering.** On power, the car has tons of steering—too much for my taste. It enters the turns off power well and with a slight push, and it feels planted mid-corner.



THE VERDICT

I don't know how they do it at Kyosho, but every car seems to be better than the one it replaces. The SP2 is pricey, but you get a lot for your money. Kyosho took some cues from aftermarket manufacturers and designed and included parts that you would find only in the hobby shop. I think I see another world championship for Kyosho in my crystal ball. This buggy is badass! ■

FIND IT

»» Go to page 243 for manufacturers' contact information.

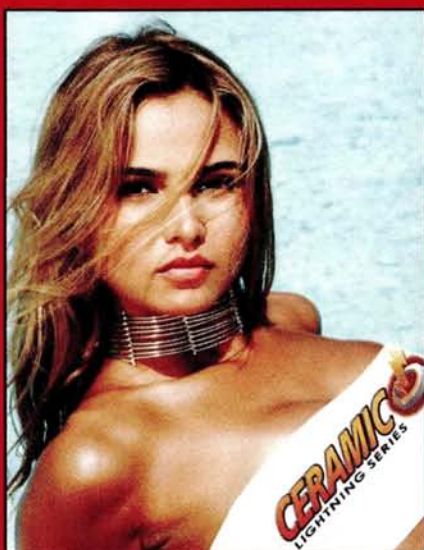


RATINGS

Instructions	●●●●●●●●●●	■	The instructions are easy to follow but some building tips are left out.
Parts fit & finish	●●●●●●●●●●	□	Modifications weren't needed to make anything fit, and the finish is topnotch.
Turn-in	●●●●●●●●●●	■	The SP2 hits the turns with authority and with a slight push.
Corner speed	●●●●●●●●●●	□	You would think this buggy was on rails in the turns because it carries speed so well.
On-power steering	●●●●●●●●●●	■	The buggy felt very good on power—much better than other buggies I have driven.
Braking	●●●●●●●●●●	□	Consistent from turn to turn and very strong all through the tests.
Bump handling	●●●●●●●●●●	■	The SP2 attacked the bumps in the track very well—as if they weren't there.
Jumping	●●●●●●●●●●	□	Easy to control in the air and lands with little if any correction.

Best buyer»» Experienced racer who wants the best

SHE'S HOT...



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HIGH-TECH SHOOTOUT

Epic, Team Checkpoint and Team Orion square off

WHEN IT COMES TO COMPETITIVE RACING, brushed motors are tops. Back in 2003, Team Orion single-handedly breathed new life into brushed electric motors with the release of its appropriately named Revolution line of modified motors, which revolutionized brushed-motor durability and efficiency. It didn't take long for these motors to prove that they provide racers with a clear advantage. Not to be outdone, other motor companies followed suit and released motors that incorporate similar technology. Now racers can choose between Team Orion, Epic and Team Checkpoint when they want the latest and greatest in modified motors. I tested all three of these high-tech modified motors and, to keep things fair, I used 12-turn doubles for all testing and comparisons. Check it out and get ready for some speed.



mod motor

By Matt Higgins

EPIC MOTORSPORTS SHOCK

As the top motor in Trinity's Epic line, the Shock is its first to use a machined-aluminum endbell with machined silver-plated copper brush hoods. In August of 2005, against a very competitive field, Ryan Cavalieri used this motor to capture his second 4WD World Championship.

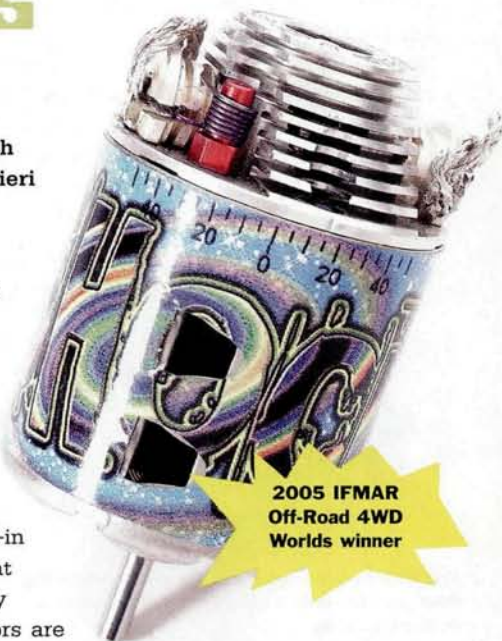


The Shock has generous heat-sink fins and uses more traditional square brush tubes. Any P-94-size brush will work, as will any standard brush spring.

« ENDBELL

Epic uses a billet-aluminum endbell that is heavily machined into the shape of a finned heat sink. The brush tubes are also machined billet, but they're made of silver-plated copper. Epic used its P-94-size brushes and standard brush springs, so there's a wide array of tuning options already available.

A look inside the endbell reveals a screw-in capacitor board with a bright-blue LED that illuminates to indicate the motor is properly connected (polarity) and that the capacitors are working. The Shock includes Trinity's new XXX Octagon brushes.



» ARMATURE

Epic sets itself apart by offering FlatWire and round-wire wrapped armatures. Epic hand winds the arms as expected and uses epoxy balancing. The stack measures 21.89mm, and that puts it just under the ROAR-mandated 22.6mm maximum. The commutator's diameter is 7.53mm. Without any shims, the FlatWire arm weighs a noticeably light 52 grams (the round-wire version weighs 58 grams). The motor's total weight is 168 grams.



The hand-wound flat wire is extremely neat looking, and the arms are epoxy balanced.



« CAN

Although the new endbell is the Shock's standout feature, the motor does have a new can design. Large vents in the bottom allow cooling air to flow through, and a rather psychedelic sticker with timing tick marks and a dyno printout adorn the can. Albeit by only 1/10mm, the Shock does have the thickest can of the bunch.

If the finned endbell didn't get your attention, the brightly colored sticker surely will.

PHOTOS: DERON NEBLETT

FLATWIRE VS. ROUND WIRE

Epic and Trinity mod motors are available in both flat- and round-wire configurations. The visible differences are readily apparent, but the performance differences are more subtle. Arms wound with FlatWire weigh less (about 10 percent less, on average) than their round-wire counterparts. The reduced rotational mass allows the motor to spool up (start the arm moving) faster. As a result, the motor has more snap and produces more early torque. A round wire, in contrast, makes more rpm at the expense of having less low- and mid-range torque. Our advice: for large (read: very large) or slippery tracks, go with a round-wire motor. For smaller tracks, grab a FlatWire motor.



TEAM CHECKPOINT COMPETITION OFF-ROAD

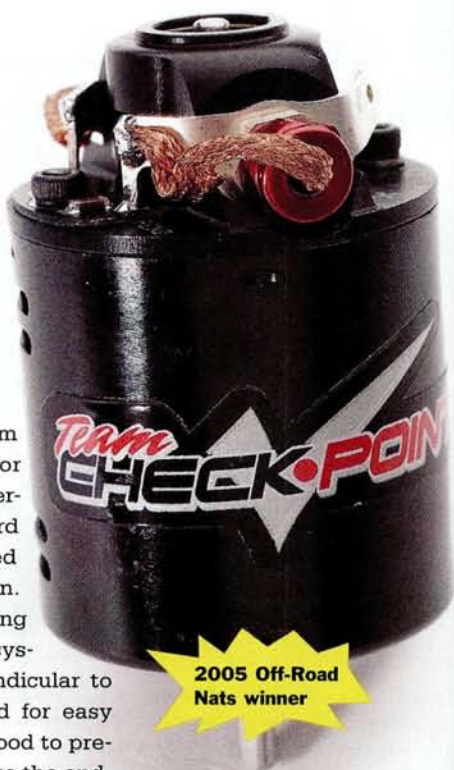
Old-school racers will recognize the Checkpoint name. Nitro-powerhouse O'Donnell bought the company when it wanted to launch its own line of electric motors. In the short time it has been out, Checkpoint has already captured impressive wins. Team driver Josh Newman won the Open Touring Car class at the Reedy Race of Champions and the Modified Touring Car class at the NORCA Nationals; Jared Tebo took the win in the Stadium Truck class at the 2005 ROAR Modified Off-road Nationals.



The Checkpoint motor has good-size soldering tabs, and the brush hoods are color-coded to indicate polarity.

« ENDBELL

The Checkpoint motor has a machined-aluminum endbell, but its finish is hard-anodized for improved durability. The brush hoods are silver-plated copper, and a small, built-in capacitor board on the outside of the endbell eliminates the need for external capacitors to be soldered on. Checkpoint uses a round brush and a coil-spring setup, but unlike the Team Orion round-brush system, Checkpoint's brushes are mounted perpendicular to the commutator. The brushes are also serrated for easy break-in, and each brush is keyed to the brush hood to prevent it from rotating. Timing marks are etched into the endbell as opposed to being printed on the can's sticker.



The Checkpoint armature is pretty straightforward; it's hand wound, but unlike the Epic and Orion arms, the Checkpoint armature features drill balancing. The stack measures 21.71mm, and out of the box, the commutator's diameter is 7.52mm. Without shims, the arm weighs 61 grams. Like the other motors featured here, a small O-ring on top of the arm should help damp any vibration. Assembled, the motor weighs 175 grams.

As is expected of a competition modified motor, every Checkpoint armature is hand-wound. The wind—in this case, a 12-turn double—is marked on the stack.

» ARMATURE



« CAN

The Checkpoint's can features a black oxide coating and several vents (12 in total) to facilitate cooling. According to Checkpoint, the material is 1.4mm thick, and it uses FB9 wet magnets. A small notch is cut in the top of the can to help dial in timing.

The can's black material might help dissipate heat; at the very least, it looks cool combined with the black endbell.



WHY ROUND?

The round, or more accurately, cylindrical brushes (used by Team Checkpoint and Team Orion) and Trinity's octagonal brushes allow a less drastic brush overlap of the commutator's segments; the brush simultaneously contacts two of the motor's three segments at almost all times. The round or octagonal contact patch results in less burning and arcing (often seen as sparks flying off the comm), and reduced arcing means increased performance and less potential radio interference. Round brushes also reduce commutator and brush wear, so you won't have to rebuild the motor as often. A round brush does have less surface area contacting the comm; Orion's angled brush design has a larger surface area with an oval contact patch.



TEAM ORION REVOLUTION

Although it isn't the first electric motor ever to use an aluminum endbell (Kyosho actually gets credit for that), the Team Orion Revolution does get recognition for bringing the idea to the mainstream racing scene, and its competitors featured here are proof that it was indeed revolutionary. Team Orion, along with its Peak brand of motors, is responsible for preventing brushless motors from taking over the racing scene.



The Revolution is very well constructed and is of noticeably high quality. Note how it has been machined to direct airflow around the endbell.

« ENDBELL

The Orion Revolution endbell has a trifecta of innovations. First and most obvious, the endbell is fashioned out of anodized aluminum. Second, the brushes are round. And third, the brushes are angled. The angled brush cuts down on brush bounce, and the round brush reduces arcing. The brush tubes are solid copper, and their angled design bears some of the load placed on the brush. This allows you to use softer springs to increase rpm. A red LED indicates that the internal capacitor board is functioning and that the motor is properly wired.



Nothing unusual here; Orion does a good job winding the arm, and there's a generous amount of epoxy on the winds.

« ARMATURE

The Revolution motors' epoxy-balanced arms are pretty standard fare. The stack is 21.65mm tall, and the commutator's diameter is 7.6mm, and that puts it in the same ballpark as the Epic and Checkpoint motors. Minus the shims, the Orion arm weighs 65 grams. The total weight of the motor is 175 grams.

» CAN

Like its armature, the Revolution V2 has a rather standard can. It's well vented and has timing marks on the decorative sticker. The mounting end of the can is stepped where the vents are to allow cooling air in even if the motor is mounted to a solid mount. Both Team Orion and Peak offer team driver versions of Revolution motors that have different can motifs as well as endbells of different colors.



The Revolution can reduces heat buildup with a healthy number of vents.

IT'S ALL IN THE ENDBELL

When it comes to these three brands of motor, they all have high-quality parts throughout and sound overall designs, but the reality of it is that it's all in the endbell. In the very recent past, it was the norm to use composite-plastic endbells with metal hardware. Molded-plastic parts are not as consistent as machined parts because fit can diminish as the molds get old. The bigger problem is that plastic, in any composite form, is more of a heat insulator than a dissipater—not good for electric motors. Aluminum endbells are much more efficient at drawing heat away from the brushes and magnets. When it comes to producing power, heat is the enemy, and cooler motors fade less and have more power toward the end of demanding races.



DYNO-TESTING

I used a Robotronic Racing Pro-Master dyno and 12-turn doubles from each manufacturer to compare the power output of these new mills. Keep in mind that although I broke in each motor and dialed in the same timing, I did not change brushes or springs. These small tweaks can make profound differences in dyno numbers and, believe it or not, motor builders such as Trinity's Chad Phillips and Team Orion's Oscar Jansen often do not tune for just maximum numbers. These dyno results are useful in that they reveal each motor's general characteristics; the motor that makes the most rpm isn't necessarily the best of the bunch.



EPIC

I dyno'd Epic's flat-wire and traditional round-wire arms, and they performed as predicted. The flat-wire has good torque. In terms of numbers, the round wire also seems to be a good compromise between the Orion and Checkpoint motors.



TEAM CHECKPOINT

The Checkpoint motor is an absolute screamer—plain and simple. With a peak of more than 43,000rpm, it's the fastest 12-turn I've ever seen. The rpm were so high, in fact, that I ordered another 12-turn to verify I was getting accurate results. Crazy rpm often come at the price of lower torque, and at max power, the Checkpoint has the lowest torque (but it's still very respectable).

TEAM ORION

As far as dyno data goes, the Revolution V2 is the polar opposite of the Checkpoint motor. Its peak torque is a strong 264Nmm that is well above the Checkpoint and Epic motors, but its peak rpm is a more modest 34,780. It's common to go down a turn when you run an Orion motor with V2 technology; you get your rpm back, but the comm and brushes still last a lifetime.

DYNO TEST RESULTS

Motor	Peak rpm	Peak power (watts)	Peak torque (Nmm)	Torque C peak power (Nmm)	Peak efficiency
Checkpoint	43,178	240.4	185.3	105	84.3%
Epic (RW)	38,131	236.7	222.1	111.1	83.3%
Epic (FW)	36,987	222.1	205.7	111.8	84.1%
Orion	34,780	227.3	264	227.3	85.8%

Nmm = Newton millimeter, RW = round wire, FW = FlatWire

TUNING AND MAINTENANCE

Epic. With its standard springs and brushes, the Epic Shock is the easiest to work on overall. It also has the widest range of springs and P-94 brushes available. Many also find it extremely easy to hand-tweak the standard springs and typically swap only the springs on the motors that use coil-springs. The Epic Shock loses some points for being difficult to solder motor leads to.

Checkpoint. The Checkpoint's large tabs make it easier to work with than the competition, and you'll appreciate that when it's two minutes before your Main and your motor is still sitting next to your car. The brush thumbscrews are also a bit difficult for large fingers. A spring swap does require brush removal.

Orion. Of the three motors, the Revolution V2 is the easiest on the comm, and that's a good thing because it is the most difficult to work on. It can be a challenge to solder motor leads to the endbell, and the motor must be disassembled to remove the brushes and springs.



FIND IT

Go to page 243 for manufacturers' contact information.

TEMP TESTING

As was stated, the real benefit that these motors offer is their ability to dissipate heat. To test how well they kept their cool, we ran each under same load for 20 minutes. I took temp readings at 5-minute interval and the ambient temp of each motor was about 67 degrees Fahrenheit before testing.

TEMPERATURE (DEGREES F)

MINUTES	EPIC	CHECKPOINT	ORION
5	139.4	132.9	128.6
10	156.4	139.1	148.9
15	158.6	139.5	166.4
20	161.0	140.9	168.7



MAGNET STRENGTH

Every generation of motors boasts stronger magnets than the previous one, and every manufacturer claims to have the strongest magnets available. To see who really has the edge, I used Team 1 R/C's Magnet Motor Meter to test the bare cans. This device is not a full-on gauss meter, but it does allow me to accurately compare the motors, and it's a great value. The Checkpoint motor scored the highest with an average reading of 5.35. Close behind, the Orion motor put 5.33 on the meter. Right behind, the Epic motor had a respectable and very close score of 5.31.

MAGNET STRENGTH

EPIC	5.31
CHECKPOINT	5.35
ORION	5.33



WRAP-UP

Is there a single best motor of the bunch? No, unfortunately, it isn't that easy. All three of these motors have prestigious wins under their belts, so they all have the goods and are capable of taking you to the front of the pack. You could buy on looks alone, and you wouldn't be hurting your chances of winning. You could make your pick based solely on which is easier to work on, and you still wouldn't be slowing yourself down. What it really comes down to is application. If you race on a high-speed track with very few slow corners, the Checkpoint motor and its outrageous rpm is a solid

choice. If you race on a track that requires a lot of accelerating and has high traction, the Orion clearly out-pulls the others with its monster torque. If you're a constant tuner, the Epic motor has more brush and spring options available than the other two motors combined. The Epic is also the best compromise motor of the three. It doesn't completely sacrifice torque for rpm or vice versa. Bottom line: electric motors have reached new heights and you, the racer, are fortunate to have a number of good choices. Enjoy and happy racing. ■

HEAD2HEAD



PRO CIRCUIT CLASH

ASSOCIATED'S AND HPI'S TOP TOURERS
TAKE IT TO THE TRACK

FACTORY TEAM TC4 VS ATSUSHI HARA EDITION PRO 4

BY MATT HIGGINS & PAUL ONORATO | PHOTOS BY PETE HALL & DERON NEBLETT



THERE'S A WAR GOING ON IN

the touring car scene. Or, if not a war, at least an indisputable arms race as manufacturers constantly try to one up one another's' latest designs. It seems we've been treated to more new high-end platforms over the last year or so than we've seen in the previous decade. Two of the latest designs to hit the market are Team Associated's Factory Team TC4 and HPI Racing's Atsushi Hara Edition Pro 4. With the TC4 still fresh, the A-team pulled no punches and outfitted its latest with the expected load of aluminum and titanium goodies; it also replaced the plastic tub chassis with a flat graphite plate. The departure from its mainstay molded component seems to have been a smart move, as Craig Drescher won the Reedy Invitational the first time out with the car. At first glance, the tweaks to HPI's Hara Edition are more subtle, but the car has already proven to be a winner. Atsushi Hara cleaned house at the ROAR On-Road Nationals in 2004, and at the 2005 DHI Cup, he beat the very fast, current world champion Marc Rheinard. With features such as a new upper deck, Delrin out-drives, a front spool, supersmooth shocks and a slew of other trick components, the Atsushi Hara Edition is fully equipped to run up front.

Both of these brand-new, shaft-driven machines have graphite chassis plates and are upgrades of previous platforms. They beg to be compared and contrasted, and that's just what did. We took these top tourers straight to the track and wrung 'em out. We tuned, tweaked, raced, banged on and bashed them until we knew we had the nitty-gritty that you're looking for. Check them out, and choose your next race machine.

HARA EDITION UPGRADES

- >> 2.25mm graphite upper deck
- >> Slotted, machined-aluminum motor mount
- >> Competition threaded-body, aluminum, fluorine-coated shocks with new O-rings and pistons
- >> Heavy-duty, self-lubricating ball cups
- >> Aluminum front solid axle (spool) and front one-way included
- >> Extra set of pivot blocks and spacers
- >> Integrated ball-diff nut
- >> Delrin rear outdrives
- >> Machined-aluminum lightweight input shafts
- >> Machined-aluminum servo mounts

HITS

- >> Aggressive handling characteristics
- >> Slotted motor mount
- >> Includes spool and a one-way

MISSSES

- >> Requires different chassis plates for carpet racing

TEST GEAR

- >> Atsushi Hara Racing Products Twister 2 ESC
- >> Spektrum DSM module and receiver
- >> Team Orion Revolution Atsushi Hara Pro Edition, 9-turn, single motor
- >> Team Orion GP-3700 V-Maxx Plus RDS Team batteries
- >> JR Racing R-1 Pro transmitter
- >> JR Racing Z8800S high-speed digital servo
- >> TRC 2K4 foam tires (cyan and magenta)
- >> Protoform Stratus 3.0 body



Delrin outdrives on the rear ball differential reduce friction with the CVDs, and the purple-anodized aluminum retaining ring prevents it from spreading when the car travels at high speeds.



HPI RACING ATSUSHI HARA EDITION

PRO 4



A new, slotted, aluminum motor mount makes motor swaps and maintenance a cinch—just loosen the motor-mounting screws, and the motor slides right out.



The Hara edition now features aluminum, threaded competition shocks that have fluorine-coated bodies, smoother O-rings and new pistons for silky smooth damping. Heavy-duty, self-lubricating ball cups were also added to beef up the suspension and maintain smooth movement.

FEATURES >>>>>>>>>>

1 The chassis has a nice, clean layout with plenty of room to do maintenance work, thanks to the efficient shaft-drive drivetrain that runs down the center of the car. Unlike other cars, all of the required running gear fits easily.

2 All of the original Pro 4's suspension adjustments made it onto the Hara edition—camber, caster, front anti-dive, rear anti-squat, droop, Ackerman, wheelbase adjustment, inboard front and rear toe, roll center and ride height. The threaded aluminum shocks have been revamped to be silky smooth with fluorine-coated shock bodies, new smooth O-rings and new pistons.

3 A brand-new, slotted, machined-aluminum motor mount that also supports the center driveshaft, and the all-new lightweight input shaft is a welcome change on the Hara Pro 4. Now it is as easy as loosening the two motor-mounting screws, and the motor will slide right out of the chassis.

4 HPI includes a solid aluminum front axle that provides better braking and on-power steering and a front one-way for the front end. At the rear sits an adjustable ball differential fitted with friction-fighting Delrin outdrives for improved performance.

5 The front and rear camber links are mounted on vertical ball studs, and under the inboard stud, spacers can be added or removed to alter roll center. All of the ball studs are machined with a hex head on top, so they're easy to install.



4

ADJUSTABLE BALL DIFFERENTIAL. The rear diff is silky smooth and features Delrin outdrives to reduce drivetrain friction.

3

SLOTTED ALUMINUM MOTOR MOUNT. The new mount makes motor swaps quick and easy.

1

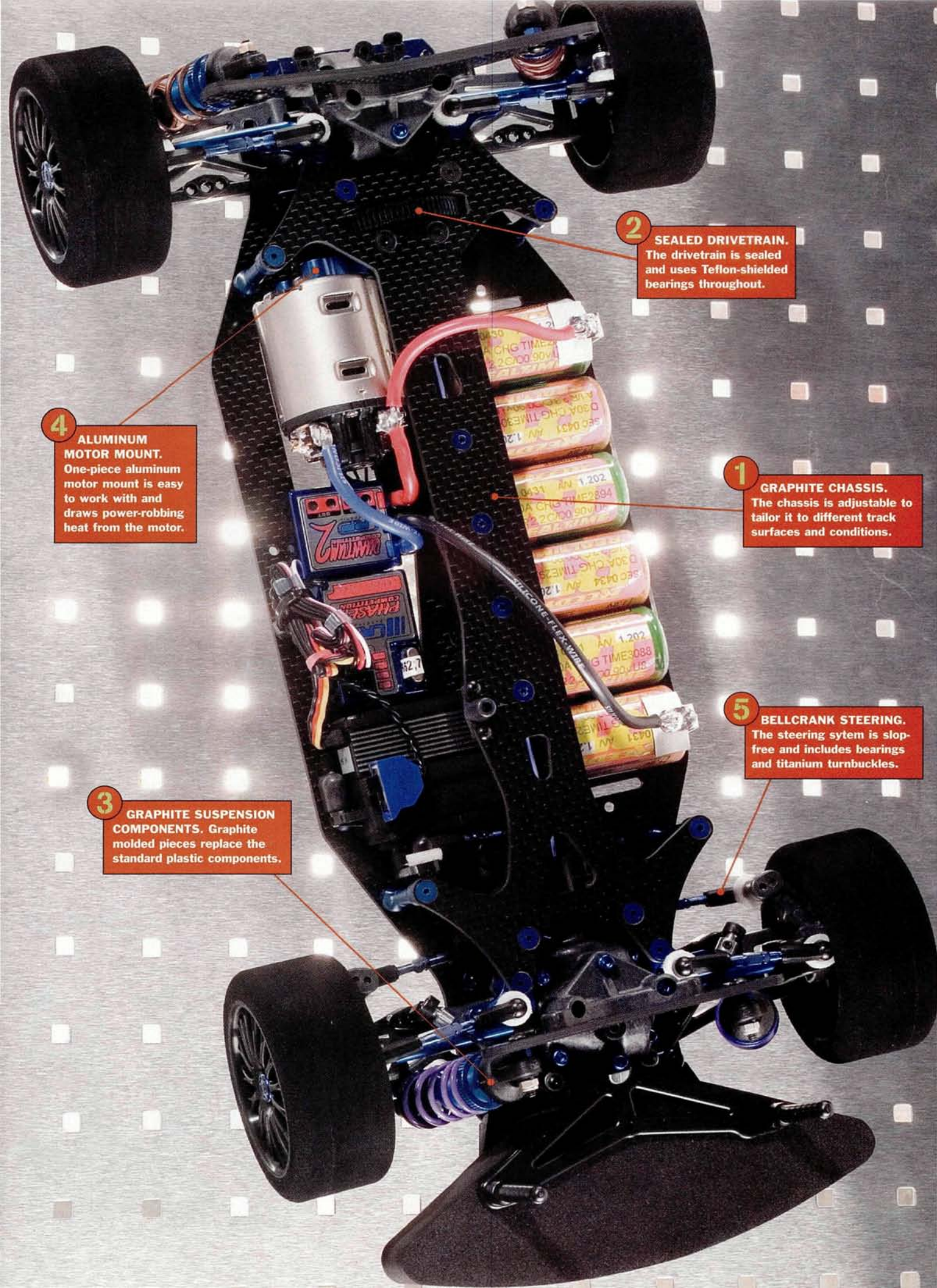
GRAPHITE UPPER DECK. A 2.25mm-thick upper deck helps create more grip without losing front to rear stiffness.

2

THREADED, ALUMINUM-BODY SHOCKS. The new shocks are easy to adjust and supersmooth for improved suspension performance.

5

HEAVY-DUTY BALL CUPS & TURNBUCKLES. The camber and toe links use beefy, self-lubricating ball cups and easy-to-adjust turnbuckles.



2

SEALED DRIVETRAIN.
The drivetrain is sealed and uses Teflon-shielded bearings throughout.

1

GRAPHITE CHASSIS.
The chassis is adjustable to tailor it to different track surfaces and conditions.

5

BELLCRANK STEERING.
The steering system is slop-free and includes bearings and titanium turnbuckles.

4

ALUMINUM MOTOR MOUNT.
One-piece aluminum motor mount is easy to work with and draws power-robbing heat from the motor.

3

GRAPHITE SUSPENSION COMPONENTS. Graphite molded pieces replace the standard plastic components.

GETTING DIALED IN

ATSUSHI HARA EDITION PRO 4

Out of the box, the Pro 4 is setup for asphalt, so we used the stiff, 3mm chassis (73826) and the stiff, 2.5mm upper deck (73082) designed for high-traction surfaces that HPI recommends. Once at the track, we used Associated's spring kit to install stiffer springs—red at the rear and copper up front. This prevented the car from scrubbing speed in the corners and reduced body roll. After a couple of runs, we noticed that the car was diffing out; that was easily fixed by tightening the diff.

FACTORY TEAM TC4

Associated includes three well-tested setups with the FT TC4. We choose the foam-tire setup, and it proved to be a great baseline. Running this setup will require that you purchase springs (go with Associated's spring kit and save money) and two extra aluminum arm mounts. The cyan/magenta tires we ran with the 19-turn motors worked great, but switching to a plaid/purple combo might reduce tire wear.



TESTING

Both of these cars are full-blown racing machines, and we'd be doing you a disservice if we didn't take them to a track. So, for some side-by-side action, we headed over to Hobby Chamber in West Haven, CT, to hit the carpet. We bolted in identical Trinity Chameleon 2 19-turn motors and used the same Protoform Stratus 3.0 bodies (painted by Bill Zegers of zegersrcgraffixx.com with Parma PSE Faskolor paint). We also used the same TRC foam tires (cyan and magenta), but from there, we tuned each car specifically to optimize its performance.

ADJUSTABILITY

Factory Team TC4. The FT TC4 is highly adjustable and has all of the tuning possibilities that any touring-car racer would want. Roll center, anti-squat, pro-squat, front and rear toe, caster, camber, wheel-base, etc.—they're all there. Add the modular chassis, and it might be the most adjustable, or at least, adaptable car on the market.

Hara Edition Pro 4. The Hara Edition is as adjustable as any pro-level car on the track, but it's worth noting that the box setup is primarily for paved tracks. That isn't necessarily a bad thing, and it certainly isn't alone in that regard.

TUNING SENSITIVITY

Factory Team TC4. The FT TC4 reacts predictably and noticeably to tuning changes; this means no voodoo or black-magic setups are needed to dial it in. When you get the car feeling the way you like it, lap times will reveal whether subtle changes improve or hurt your cause.

Hara Edition Pro 4. When you make an adjustment on the Hara Edition, you can feel it on the track. No head-scratching required; the change either worked or it didn't, and you often don't need lap times to know what the result will be.





ON THE CLOCK

FACTORY TEAM TC4

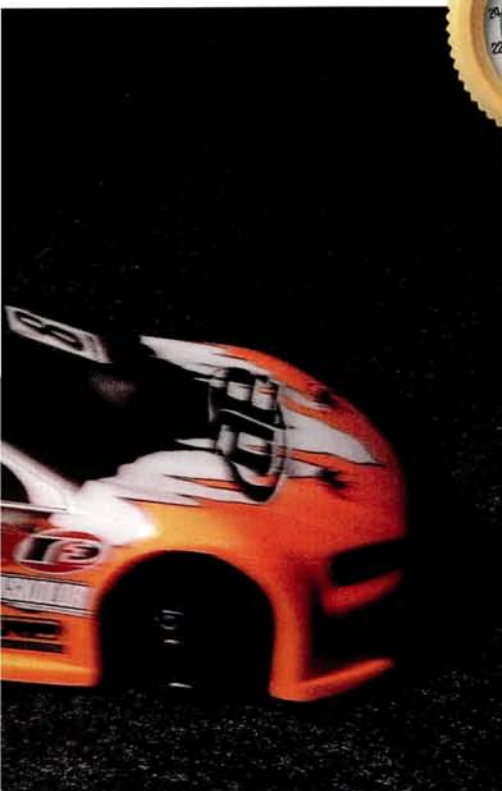
HARA EDITION PRO 4

MATT HIGGINS

Best lap time (sec.)	12.484	12.616
Average lap time (sec.)	13.105	13.514

PAUL ONORATO

Best lap time (sec.)	13.377	12.836
Average lap time (sec.)	14.059	13.466



CORNERING

Factory Team TC4. The FT TC4 is rock-solid and very easy to drive. If it pushes, it pushes consistently and doesn't have a pronounced push off- or on-power. It doesn't take much to get the FT TC4 to carve tight corners, but it likes nice, smooth, flowing lines and can't jump off-line and pass quite as easily as the Hara Edition can.

Hara Edition Pro 4. Not a hint of push, but it isn't at all loose. Cornering is the Hara Edition's strong point, and there's no doubt that, in the right hands, this car

can be driven extremely fast. If you tend to overcorrect, this car might have too much steering for you.

HIGH-SPEED HANDLING

Factory Team TC4. The FT TC4 feels so planted that it's a natural for great high-speed handling. It tracks straight and isn't at all erratic.

Hara Edition Pro 4. This is where a lot of steering can bite you in the you-know-what. Getting a little out of shape at full speed can turn into a big mess if you overcorrect and don't let off the juice. With a lot of steering, the Hara Edition feels twitchier than the FT TC4.

EASE OF MAINTENANCE

Factory Team TC4. Because of the new plate chassis, the FT TC4's components are more accessible than those on the regular TC4 (which was already pretty easy to work on). Like all Team Associated cars, the FT TC4 is very user-friendly. Using battery tape on any car can be a pain, though.

Hara Edition Pro 4. No headaches here. With its shaft drive and enclosed drive-

train, the Hara Edition Pro 4 requires little maintenance, and the routine stuff is straightforward and easy. The "open" motor mount makes motor and pinion swaps a snap.

DURABILITY

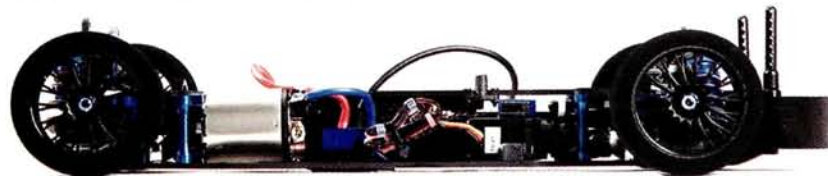
Factory Team TC4. Nothing broke. Aluminum inner arm mounts go a long way toward keeping the FT TC4 on the track and out of the pits. We didn't break any, but it's a good idea to carry spare front arms no matter which car you run. One of the plastic outdrives was starting to look a little worse for wear after what would be equal to a month of racing.

Hara Edition Pro 4. The Hara Edition took many hits, slams and wall slaps, and it came away unscathed. If the front arms were once brittle, they aren't anymore. We suspect—but HPI won't confirm—that the arms' graphite content has been reduced slightly. On day two of testing, we did toast the front diff gear. We've never seen this happen on a touring car—Pro 4 or not—so we're sure it was just a fluke.

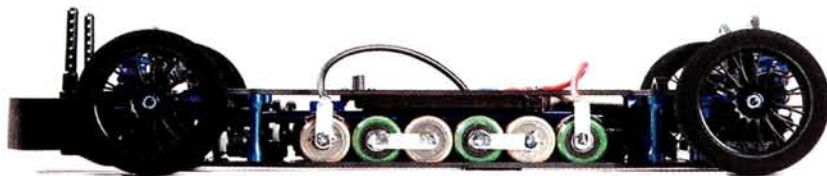


SPECIFICATIONS

FACTORY TEAM TC4



RIGHT



LEFT



FRONT



REAR

FACTORY TEAM TC4

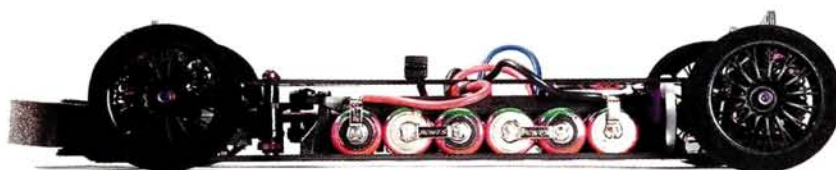
ATSUSHI HARA EDITION PRO 4

Chassis material	Graphite	Graphite
Chassis thickness	2.5mm	2.5mm
Main driveshaft material	Aluminum	Aluminum
Driveshafts (type/material)	MIP CVDs/aluminum	MIP CVDs/aluminum
Bearing type	Teflon-shielded	Metal-shielded
Tires/wheels	Not included	Not included
Shock type	Threaded-body, top-filled	Threaded-body, top-filled
Shock material	Aluminum	Aluminum, fluorine-coated
Front differential	Ball	Spool or one-way
Rear differential	Ball	Ball
Swaybars	Front and rear	Front and rear
Battery mounting	Tape	Plastic strap
Primary gear pitch	48	64
Transmission ratio	2.5:1	2.44:1
Final drive ratio	9.47:1	12.57:1
Wheelbase	10.2 in. (259mm)	10.2 in. (259mm)
Weight, as tested	3 lb. 2 oz.	3 lb. 3.2 oz.
Price	\$340	\$380

ATSUSHI HARA EDITION PRO 4



RIGHT



LEFT



FRONT



REAR



TRY NEW FIRE & ICE BLEND

Runs like fire Cools like ice
Red Max Model Fuels

Power, Performance, Protection
Over 35 years of fuel experience

- On road, Off road, cars, trucks, dragsters,
- Custom fuel blended fresh daily
- Club discounts • Best fuel in the market
- 0% to 75% nitro fuels • Quality ingredients

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HEAD2HEAD

DRIVER NOTES

MATT HIGGINS

FACTORY TEAM TC4

The FT TC4 is a great, all-purpose touring car. The new chassis design is extremely adaptable and makes the FT TC4 a lot of car for the money. With its modular design, it can work as well on carpet as it does on pavement. At \$340, the FT TC4 is also a great value. At that price, it costs far less than most, if not all, other top-shelf kits. Having an extra \$100 or more to spend on batteries and other gear is a nice bonus, considering the car is loaded with hop-ups right out of the box. Having raced the regular TC4 Team Kit for a season, I believe all of the car's shortcomings have been very well addressed. With the much stiffer chassis, the FT TC4 rotates much better and scrubs off less speed when negotiating consecutive tight corners than its predecessor does. Though it didn't actually hinder performance in my eyes, there was some suspension and steering slop on the original TC4. Team Associated seems to have tightened up the tolerances as the FT is now, as slop-free as any other touring car. I race touring cars both indoors and out, so the FT TC4 is my pick because of its versatility and great price.

ATSUSHI HARA EDITION PRO 4

This car impressed the hell out of me. It simply doesn't know the word "push." Like your dad's old Kodak, the Hara Edition is a point-and-shoot affair. It's extremely easy to pass with this car; breaking off your line hardly scrubs off any speed. You don't have to wait for the car in front to screw up or go wide; you can dive in anywhere anytime you like with the Hara Edition. This car honestly put a smile on my face. If money were no object, this would be my car, but it's already a good chunk more expensive than the FT TC4 and needs a chassis-plate swap to reach its full performance potential on the fuzzy stuff, and that adds to its cost. I was also impressed by the Hara Edition's durability, as other Pro 4s have proven to be somewhat more fragile than other cars when running indoors. I really like the car, but when you add in the price of an extra chassis plate, its total cost gets to be too high for me.

PAUL ONORATO

FACTORY TEAM TC4

The Factory Team TC4 has a distinctly different look from its baseline TC4 stablemate, and its improved performance reveals that the change was not just about appearance. It's much easier to get the new TC4 setup to the track, and I was able to lay down consistent laps, thanks to its smooth handling characteristics. When entering or exiting a turn, small mistakes do not instantly cause the car to get all out of shape. It seems to struggle to get around traffic, though; the car likes to maintain its line through turns, and to dive in deep or run wide, I had to get off the throttle for too long, so any advantage was soon lost. In the pits, the car was easy to adjust and work on, but taping in the batteries is a downer for me. I prefer the quick-and-easy plastic hold-down on the Pro 4. The rest of the car is grade A. Team

Associated adds plenty of high-quality materials such as new graphite and aluminum components, Teflon ball bearings and titanium turnbuckles that improve the TC4's performance and durability. For \$340, you get a car that's loaded with hop-ups and ready to race.

ATSUSHI HARA EDITION PRO 4

The Hara Pro 4 goes together with ease, thanks to a clear instruction manual and excellent parts fit and finish. Extra C-hubs, pivot blocks and spacers—not to mention a front spool and one-way—are bonuses. The Pro 4 comes with every imaginable chassis-tuning feature you could need for racing, and it's constructed out of high-quality materials. On the track, the Pro 4 is absolutely awesome. I could put it anywhere on the track, and it had no problem maintaining its composure. The front spool definitely helps when getting around lap traffic. I could pick any line I wanted, brake late and lay down the power to accelerate out of the corner. I did not have to wait for the car in front of me to make a mistake. The key is to stay smooth; erratic inputs on the steering or throttle scrub speed. The downside is the higher cost of the kit, and if you want to go carpet racing, it needs a thicker upper and lower deck. But that isn't enough to sway me from choosing the Hara Edition Pro 4 as my pick. The handling characteristics better suit my driving style, and the chassis is built tough for racing.



THE BOTTOM LINE

These cars are very close. If you go to any track and pick any two drivers, it doesn't matter who gets which car; the faster driver will win. The cars are that close. If you race only outdoors, it's really a toss-up. Go with whichever one your local hobby shop stocks more parts for or whichever one you think makes you look cooler. If carpet racing is your game and you have the money, you'll love the Atsushi Hara Edition as much as we did; change the chassis plate, and it's dialed. If you race indoors and out and don't have the deepest pockets, the Factory Team TC4 is the car for you. Our opinion: it's a good thing when you can't go wrong with either car, but we'll give the overall nod to the TC4 because it works on all surfaces out of the box and costs less to boot. ■

RADIO CONTROL ZONE

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RC community**

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- engines to transmitters
- communicate with thousands of expert racers
- find answers to your questions

www.radiocontrolzone.com/cars

gotta get guide

Oooh, I gotta have that. And that. And that thing over there. There's always something else to wish for in RC, and that's why we put together the Gotta Get Guide. It includes familiar favorites as well as super-new stuff that just hit the shops, and it's all grade-A gear. Feast your eyes; it will be a good warmup for next month's big January issue, where we reveal the hottest new releases for 2006!

50
must-haves
for your
holiday
wish list

BY THE RC CAR ACTION TEAM | PICS BY PETE HALL & DERON NEBLETT

OFNA Hyper One Seven

If bigger is better, then this thing is awesome! In addition to sheer size, the 1/7-scale One Seven scores with Hyper .28 power, dual rear exhausts, a choice of three super-car body styles and a first for on-road nitro: reverse!

GOTTA GET BECAUSE

- » Ultimate parking-lot pounder
 - » Realistic exhaust
 - » Reverse gives this ride stunt skills
- 14322; \$800



DURATRAX Frequency checker

Anybody on 68?

This checker scans all 75MHz frequencies and let's you know which ones are in use by lighting up an LED for each "on" channel.

Now all you have to do is track down the guy with your clothespin.

GOTTA GET BECAUSE

- » No more switch-on surprises
 - » Easy to use
 - » Fits in your pocket
- HCAP0340; \$50

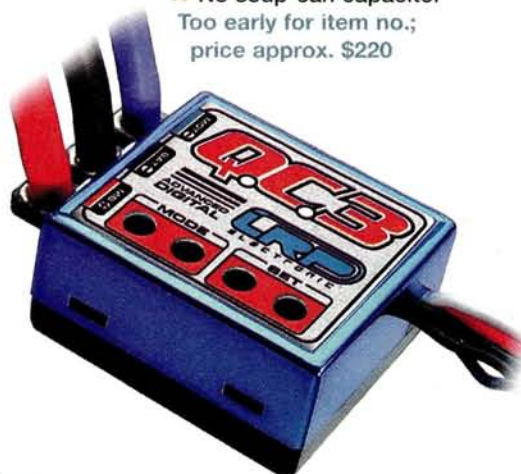


LAP QC3

Quantum-series speed controls have won three consecutive world championships, including the 2005 IFMAR Off-Road Worlds with Ryan Cavalieri. He used the latest Quantum, the QC3. It's as tiny as the previous Quantums, it doesn't require a giant power capacitor, and it's smoother than ever with six profiles to suit any track, on or off-road.

GOTTA GET BECAUSE

- » Wins Worlds!
- » Ultrasmall, ultralight
- » No soup-can capacitor
- Too early for item no.; price approx. \$220



TRINITY Sirio .30

If you like your big-blocks extra big, consider this Italian stallion. Sirio's supersized mill has the same footprint as a .21 but nearly a third more displacement for tire-churning torque in your monster machine. And with its included shaft-start backplate, it's a perfect fit for the HPI Savage and other shaft-start trucks.

GOTTA GET BECAUSE

- » Shaft ready
 - » 3-port ABC construction
 - » No replacement for displacement
- \$30RS; \$350



CEN Nemesis

What happens when CEN takes the Genesis racing? You get the Nemesis, a slimmer, more track-worthy ride that mixes performance-increasing mods (no reverse, "50 Series" wheels, Airtronics MX3 radio) with favorite Genesis features (reservoir shocks, 2-speed, and a meganormous .46 engine).

GOTTA GET BECAUSE

- » Airtronics FM radio gear
 - » High-torque servos
 - » Biggest-in-class .46 engine
- Too new for item no. and price

KYOSHO Inferno 777 Special 2

We'll always lust for the latest Inferno-series buggy, especially a full-option version like the Special 2. The hottest 777 has polished hinge pins, a longer wheel-base, a repositioned engine, new shock springs, 5mm shock towers and a bunch of other tweaks to keep it at the top of the performance heap.

GOTTA GET BECAUSE

- >> Super handling >> Winningest buggy series ever
- >> Factory ride

31779, \$600



AIRTRONICS M11

With a faster response time, 30-model memory and a larger LCD screen with selectable backlight colors and tons of new features, the Airtronics M11 is sure to be on every racer's lust list. Many of the top racers now use the M11, and you can, too.

GOTTA GET BECAUSE

- >> Killer looks >> Multiple screen graphics
- >> Easy to program and use

90270TX; \$399



PRO-LINE Bead Loc wheels

With Pro-Line's Bead Loc wheels, you can throw out your tire glue. The die-cast aluminum lock rings and mounting hardware securely clamp your tires without CA, so you can swap tires or wheels without throwing away perfectly good gear.

GOTTA GET BECAUSE

- >> No more wasteful rim-tossing
- >> Looks killer >> No more glued fingers

2680-01-2680-02; \$45/pair



PRO-LINE Moab 40s

The Moab 40 series tires are Pro-Line's largest tires, and they're perfect for those of you who like their monster trucks out of this world. The realistic tread pattern creates plenty of traction not only on the contact patch but also on the sidewalls—perfect for rock-crawling.

GOTTA GET BECAUSE

- >> Realistic and functional tread pattern
- >> Looks great on a set of Bead Locs

1117-00; \$37/pair

GS RACING CL-1 buggy

They've had some capable buggies in the past, but this looks like the real breakthrough for the GS guys. The CL-1 is a clean-sheet design that incorporates all the latest go-fast features of the best pro buggies in a no-compromise, low-profile racing platform. High performance, highly adjustable and highly desirable, indeed.

GOTTA GET BECAUSE

- >> Marty Korn likes it >> Beefy pivot-ball suspension
- >> Machined chassis

Too new for item no. and price



HORIZON Spektrum DX-3

No module? No problem. Spektrum's new integrated system delivers all the benefits of 2.4GHz technology in a standalone radio system. No crystals, no channels, no problems. And it even looks cool!

GOTTA GET BECAUSE

- » Just switch on and run; no one is on your channel. Ever.
 - » Distinctive "Spektrum gray" finish
 - » Fully adjustable transmitter
- SPM2030; \$250



TEAM LOSI Secret Mini Truck

Maybe it will be called the Mini LST, maybe not; all we know is, we want one! Losi hasn't released any official specs since we scooped the new LST-style mini in the last issue, but judging by the air it's getting, it should rock!

GOTTA GET BECAUSE

- » LST-style multiplate chassis
 - » Big oil shocks
 - » Secret-ness increases lust factor
- Too new for item no. and price



I-WAVER 1/35 VS Tanks

Remember when you had to settle for making gun noises with your friends instead of actually shooting them? Now, you can finally make each shot count with I-Waver's infrared battling tanks. They're superscale and fun by themselves, but get two, and they can actually shoot and disable each other with infrared blasts! Fun, and no danger of losing an eye.

GOTTA GET BECAUSE

- » They look like the real deal
 - » Full-function turrets
 - » Shoot your friends!
- HCAC0003; \$80



RPM Adjustable camber LST arms

It's such a bummer that you can't adjust camber on your Team Losi LST ... or can you? RPM's new adjustable suspension lets you adjust the LST's camber using the stainless-steel adjustment rod in the upper arm. And the lower arm has been beefed up to withstand more punishment, too!

GOTTA GET BECAUSE

- » Way more adjustable
 - » Anti-swaybar mount retained
 - » Crazy strong
- 73192 (black), 73195 (blue); \$13



XRAY XB8R

We like the XB8, but we also like having a few bucks left for race fees and maybe lunch. The R (for Raycer) version trims a bunch of bucks, but it's still a pro-caliber ride, and even has some new parts (like its longer arms) that XB8 drivers might want to add to their rides!

GOTTA GET BECAUSE

- » XRAY = super quality
 - » Pro specs, no mortgage required
 - » First-class materials
- XB8R; \$500



HITEC Ti-gear Digital Servos

Hitec's titanium-gear servos are extra tough and have mondo pulling power to maneuver your monster or big buggy with ease. And the heat-sink case looks pretty dope, too.

GOTTA GET BECAUSE

- » Digital precision and power
 - » Tough titanium gears » Chunky arm included
- Item no. varies with model; \$130



TEAM ASSOCIATED Monster GT 460 SE

How do you make the Team Associated Monster GT more formidable? You give it a big boost of power and make it even more durable. The guys at Associated did exactly that by including a new .28 Thunder Tiger big-block engine, all-steel gears in the tranny and new tougher, steel center CV axles.

GOTTA GET BECAUSE

- » More power than you can handle » Beefy drive train » Big and bad
- 20501; \$429

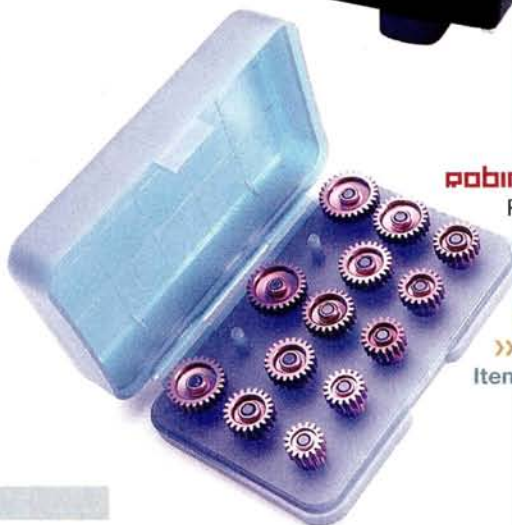


NOVAK Ionic-D

Affordable, AC/DC and a 10-amp discharger, too? That's just the beginning for Novak's Ionic-D. It also has dedicated Ni-Cd and NiMH modes, a built-in cooling fan and 4- to 8-cell charging capability to cover everything from receiver batteries to your best racing packs.

GOTTA GET BECAUSE

- » Loaded with features » Built-in 10-amp discharger
 - » Great price
- 4465; \$75



ROBINSON RACING Aluminum pinion-gear set

Robinson Racing's superlight purple-anodized pinions are precision-machined of hardened aluminum and use beefy 5-40 setscrews to stay put. On-road or off, these are the gears to get. We put ours in an RPM pinion case to keep 'em organized and nick-free.

GOTTA GET BECAUSE

- » Lightweight design » Precision-machined » They're purple!
- Item no. varies; \$5

PROTOFORM Chevy Silverado

RC needs more street trucks, and the Protoform shell is one of the best. Naturally, it's got overspray film and window masks, but its that super sano styling that gets us psyched for the street.

GOTTA GET BECAUSE

- » Even includes a wing
 - » Top-quality Lexan
 - » Super street style
- 1478-00, \$23



BRUSHED AND BALLISTIC!

Brushless motors get a lot of buzz, but brushed motors are still the number-one way to race and the latest brush tech is better than ever. Check out these top modified contenders:

EPIC Shock

With its brightly colored, retro motif and finned aluminum heat-sink endbell, the Shock stands out in a crowd. It's available in FlatWire (best for most applications) and traditional round wire (good for large tracks) and features Trinity's superlong-wear XXX Octagon brushes.



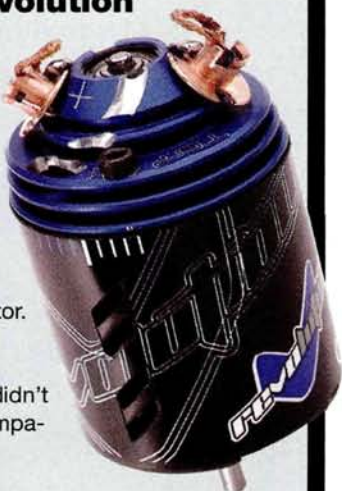
TEAM CHECKPOINT Competition

Checkpoint is O'Donnell Racing's line of electric motors. In addition to a black, hard-anodized aluminum heat sink, the Checkpoint Competition motor features round brushes and coil-style brush springs. The copper brush tubes have color-coded aluminum endcaps to indicate polarity.



TEAM ORION Revolution

Team Orion was the first of the current motor companies to use an aluminum endbell. If that wasn't enough of a departure from the norm, Orion also spec'd round brushes and angled them down towards the commutator. The result was a lot of wins for guys who run Revolution motors. It didn't take long for other companies to follow suit.



GOTTA GET 'EM ALL BECAUSE

- » They're all fast » Comm wear is much lower
- » No more one-run brushes

OFNA Hyper 8 Stingray buggy

OFNA continues its popular Hyper buggy platform with the recently released Hyper 8 Stingray. A futuristic-looking body and rear wing make the car stand out, and the fully loaded chassis backs up its performance.

GOTTA GET BECAUSE

- » Loaded with pro-level features
- » Derived from successful Hyper line » Highly adjustable

Too new for item no. and price



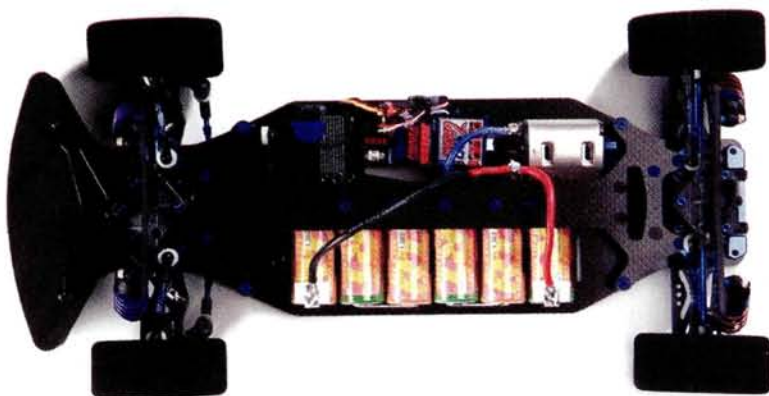
YOKOMO D1 Drifters

No one does drift cars like Yokomo. With more than five body styles to choose from, including classics like the Trueno and new faves like the Skyline and Sylvia, Yokomo knows a thing or two about getting sideways. The MR-4TC series chassis are tough, shaft-drive makes them parking-lot proof, and Yoke's unique tire system makes drifting simple.

GOTTA GET BECAUSE

- » Tuner-style drift performance » High-performance chassis » Kit or RTR

Item no. varies with body style; \$225 (kit), \$325 (RTR)



TEAM ASSOCIATED Factory Team TC4

Who wouldn't want to own the '05 Reedy Race-winning car? With its woven carbon-fiber chassis and spine plate that allows you to adjust chassis flex and a full assortment of Factory Team tweaks, the FT TC4 is sure to be a hot seller this indoor season.

GOTTA GET BECAUSE

- » Tons of carbon fiber » Highly adjustable » A-main performance right out of the box

30102; \$379



MPC Academy Velox GP

If an 1/8-scale buggy is a little too much buggy for your wallet or backyard, the Velox is the answer. It's 4WD, .15-powered, goes like stink, and it's a blast to drive—all while taking a smaller bite out of your budget.

GOTTA GET BECAUSE

- » Big-buggy fun in a smaller package
 - » 2-needle .15 power
 - » Fully adjustable suspension
- 15980; \$289



TEAM ORION Secret Wasp engine

This isn't another "more power" story; according to Team Orion, the new Wasp engine is a ground-up rethink of nitro-engine technology. Orion claims set-it-and-forget-it mixture adjustment, Toyota-like reliability and superior efficiency are just a few of the big pluses.

GOTTA GET BECAUSE

- » No need to chase carb settings » Electric-motor-like reliability » If all those claims are true—look out!

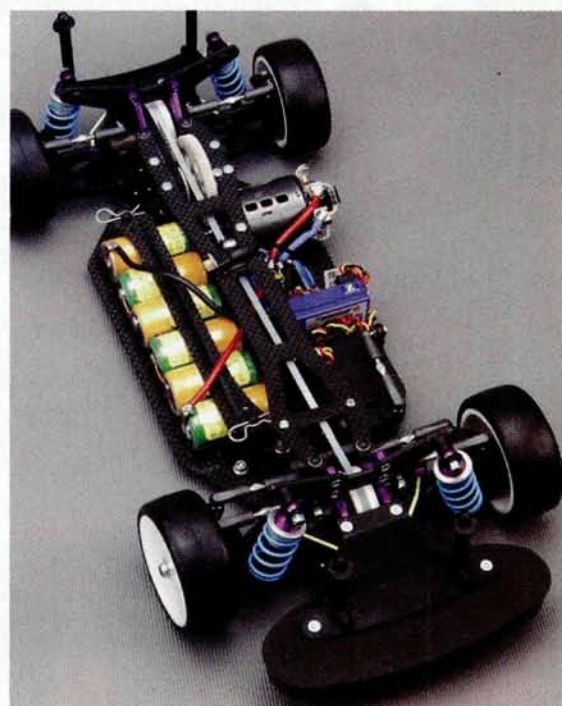
Too new for item no. and price

Schumacher Mi2

Schumacher has always built some of the most sought-after touring cars, and the Mi2 is no exception. The car comes with such features as new C-hub suspension, new upper and lower chassis design, dual-axis battery tray, MIP CVDs and an ultra-efficient drivetrain featuring alloy diff outputs and tungsten diff and thrust balls.

GOTTA GET BECAUSE

- » Tons of alloy goodness » Highly adjustable » Smooth belt-driven drivetrain
- K046 (S1) \$240; K047 (carbon fiber) \$300



TAMIYA Vintage cars

Anyone who got into RC in the early '80s probably owned a Tamiya car or two. Well, if you missed that era or feel nostalgic and want to relive the "early days" of RC, Tamiya makes it easy with these re-released vintage models. The Grasshopper, Lunch Box, Hornet and Wild Willy 2 are all back in action.

GOTTA GET BECAUSE

- » Old-school cool » XB versions include electronic speed controls » You'll be the hippest 30-year-old on your block
- 58336 (Hornet), \$100; 58346 (Grasshopper), \$90; 58347 (Lunchbox) \$90



Your Choice:

128oz/in @ 0.06 sec./60°

Or

320oz/in @ 0.15 sec./60°



Top: the Z9000S
128oz/in,
0.06 sec./60° @ 6.0V

Bottom: the Z9000T
320oz/in,
0.15 sec./60° @ 6.0V

Both measure:
1.58" l x 0.82" w x 1.56"

Only 2mm longer, wider and higher than typical "standard size" steering servos, JR's 9000-series digitals offer either blinding speed with a bit more torque than anything comparable, or stump-pulling torque with excellent speed.

Unlike ordinary servos, their electronics are specially modified to help them shrug off the rigors of racing. Plus 9000-series alloy gear trains are the most precise and durable JR has ever produced.

What's more, the servos boast distortion-resistant 6-screw cases with reinforced output supports and integrated, miracle-resin heat sinks to keep 'em precise in race after punishing race.

So whether you need the scorching speed of the Z9000S or the brute torque of the Z9000T, they're both built to win. And they're at better dealers and tracks nationwide.

JR RACING
WHAT PERFORMANCE IS ALL ABOUT.™



PARMA X-Citer Revo stadium body

Your Traxxas Revo will stand out from the crowd with this unique shell! Parma's X-Citer is a direct fit for Traxxas' top truck, and it comes with overspray protective film, window masks, decals and painting instructions.

GOTTA GET BECAUSE

» Unique styling » Direct fit for the Revo » No more RTR clone effect
10209; \$32



LRP 14A Power Supply

The perfect complement to any high-end charger is a small, yet powerful power supply. LRP's 14A unit is as compact as they come, and the device also comes with two AC power cords for 110/220 volts, an on/off switch, universal output jacks and an internal fan.

GOTTA GET BECAUSE

» Small and lightweight » On/off switch—all power supplies should have one! » Plug it in on any continent, and it works.

LRP43150; \$150



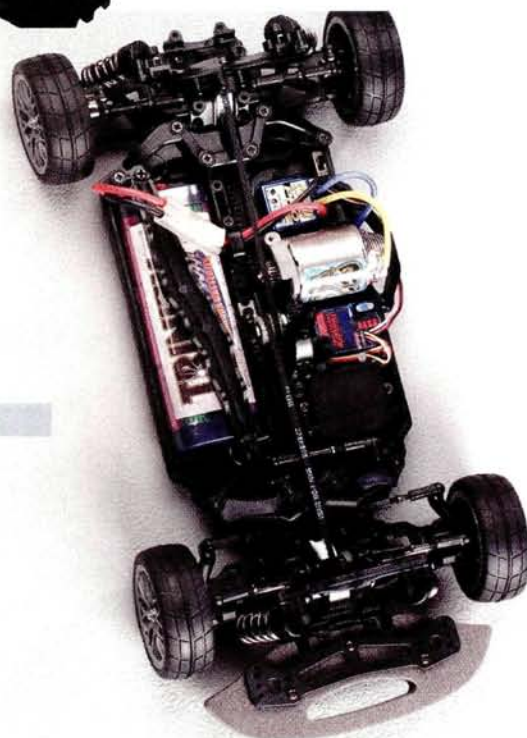
TEAM LOSI Mini-T Pro

Team Losi invented the 1/18-scale high-performance truck category, and the latest Mini-T is even more capable than the original. The Pro model adds aluminum-body oil shocks, titanium turnbuckles, ball diff, dual-disc slipper clutch, MIP CVDs and a bunch of other hot upgrades to the mix. And a faster motor, too! Who wouldn't want one of these bad boys?

GOTTA GET BECAUSE

» Stylish Fury body » Includes all the factory upgrades » Fast!

LOS0210; \$150



TRAXXAS Jato

Just when all nitro stadium trucks looked the same, Traxxas sprang the Jato on us. Internal 2-speed? Revo-style shocks and wheels? Electric start and TRX 2.5 power? Sign us up. This fast and fun all-rounder is just about perfect for drivers who want to bash and race on and off the dirt.

GOTTA GET BECAUSE

» No one does RTR as well as Traxxas. Best manual, DVD—the works
» Super truck styling » 2-speed!

5510; \$380

TAMIYA TA05

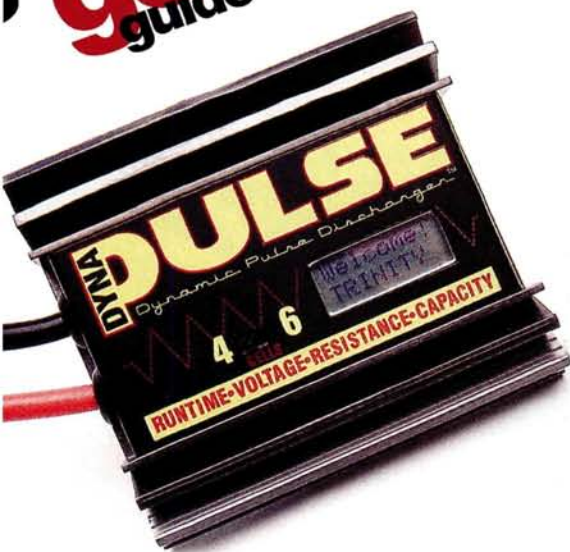
The new TA05 features a unique twin-belt drivetrain that is driven off a centrally mounted pulley. The isometric belts (that's equal length to me and you) reduce drive resistance and help achieve better tranny efficiency at high speeds. As of now, the TA05 is available with Ferrari F430, Mercedes C-Class DTM and Raybrig NSX bodywork.

GOTTA GET BECAUSE

» Efficient (and cool-looking) drivetrain » Ball diffs front and rear » Durable tub chassis

58345 (Ferrari) \$255; 58350 (Mercedes) \$245;

58353 (NSX) \$242



TRINITY Dyna Pulse discharger

"Dear light bulbs: it's been fun, but I need to see other dischargers." Sorry, 1157s, we're hanging with the Dyna Pulse now. It pulls our packs down quickly and safely and then gives us discharge data. You can't get that from a taillight.

GOTTA GET BECAUSE

» Rugged » Easy to store » Displays discharge data

TR122001; \$70

LUNSFORD Titanium stuff

You can stare at the periodic table all you like, but nothing tops titanium for its combination of high strength and low weight. Nobody manipulates the stuff like Lunsford, which offers hinge pins, ball studs, turnbuckles and fasteners for all types of vehicles, both in single servings and as complete titanium upgrade kits. Increased durability and reduced weight? We all want that.

GOTTA GET BECAUSE

» Formerly used to make spy planes
» Stronger yet lighter » Also looks cool

Item nos. vary; \$10 to \$90



thunder tiger Nitro Ducati 969 Testastretta

The only thing that could make Thunder Tiger's beautiful Duck more realistic is actual engine power—and here it is. The .12-powered pull-start machine is fully RTR including the painted vinyl rider, and all the electric bike's features return—including real chain drive, full suspension and an ACE Jaguar radio system.

GOTTA GET BECAUSE

» Functional underseat exhaust! » Totally RTR » Surprisingly easy to drive

TTR6301-F41; \$450

XTM RACING Mammoth ST

With its lower stadium truck stance, race-tuned suspension and 2-speed transmission, the Mammoth ST has all the right stuff to be a dominant force at the track. Getting into racing is easy because the Mammoth ST arrives RTR with a painted and trimmed body and a factory-installed engine and radio gear.

GOTTA GET BECAUSE

» Ready to race » Powerful engine
» 2-speed tranny

07304; \$340



HPI Savage 25 Limited Edition

The latest Savage is definitely the greatest Savage. HPI packed all the most popular hop-up components (including a 3-speed tranny, polished pipe, vented brakes, cam-type servo-saver and chrome wheels) into the already well-equipped ride to deliver a must-have monster.

GOTTA GET BECAUSE

» 3-speed tranny » High-grip Dirt Bonz tires
» S-25 engine

852; \$520

HOT WATER

Everyone who's into RC should own at least one boat. Trust us; if you like RC cars, you'll like these boats. Many of today's boats are no-hassle ready-to runs, and even if you find one that isn't, boats use the same radio gear as you already have.

Kyosho Mini-Z Formula boat

That it fits in your palm only makes the 9-inch-long Kyosho Mini-Z Formula so much cooler. It's amazing how much detail Kyosho squeezes in its Mini-Zs. The paint job rules, the out-board looks like the real deal, and the little details such as the driver and the side mirrors seal the deal: these little boats are the bomb.

GOTTA GET BECAUSE

» Includes everything—even the charger! » Highly detailed » Cool in a pool
Item no. varies; \$120



HORIZON Pro Boat Vortex airboat

Want a boat but want something different? The Vortex should fit the bill. With its engine mounted high above the hull and a 3-blade prop pulling it along, this boat is anything but typical. The Vortex features a fiberglass hull, a big .46 engine, a water-proof radio box and a protective shroud over the prop.

GOTTA GET BECAUSE

» It's ready to run
» Big ol' .46 engine
» It's an airboat!
PRB2700; \$270

Hobbico AquaCraft High Speed 2

Meet the perfect home for your extra RC gear. The High Speed 2 is the handi-work of RC boating legend Jerry Dunlap, so you know the design is solid. Even better, the hull is fully assembled. Toss in your spare radio gear and get an engine, and you're on your way to blasting around in one trick race boat.

GOTTA GET BECAUSE

» Race-worthy hull » Assembled hull » Looks fast even when sitting still
Item no. varies; \$100



TRAXXAS Villain EX

With twin motors and batteries, the E-Maxx is pretty bad. Put that power system in a boat, and you'll have one sick ride. The EX is built to take a beating and includes everything you need—minus two batteries. If two batteries sounds like too much, Traxxas also offers it in a 7.2V version, and if you like smoke and noise with your RC, check out Traxxas' Nitro Vee.

GOTTA GET BECAUSE

» It's fast
» Handles any water conditions
» Looks cool
1592; \$313



thorp Pro Hex Drivers

Thorp Tools are world-renowned for being top quality, and they're bona fide RC classics. The fluted handles are easy to twirl, and

the hard-steel tips fit tightly job after job. If you're serious about RC, you already have a set!

GOTTA GET BECAUSE

» Tough tips, lightweight handles » Precise fit » Pro-quality tools for your pro-quality gear
Item nos. and prices vary



EXTREME STANDZ Paint Stand

Painting your car neon orange is pretty cool; painting your arm neon orange, not so much. That's why we like to use eXtreme standZ posable paint pal. It keeps the paint off you, and lets you use two hands for precision painting.

GOTTA GET BECAUSE

» No more painted fingers » Holds the body at any angle » Built-in parts tray
EXT9103; \$40



VANTAGE Carbon-fiber everything

If you're wondering who the king of carbon fiber is, it's Vantage. These guys aren't just cutting stuff out of plates, they're making complex molded parts—Revo chassis and arms, roll cages, touring car wings ... wild stuff. Light, strong and pretty, we like.

GOTTA GET BECAUSE

» Everything is cooler in carbon fiber » Not just another plate part » Lightweight and superstrong
Item nos. vary; \$50 and up

OFIND IT

» Go to page 243 for manufacturers' contact information

KYOSHO TRUGGIES COMING SOON

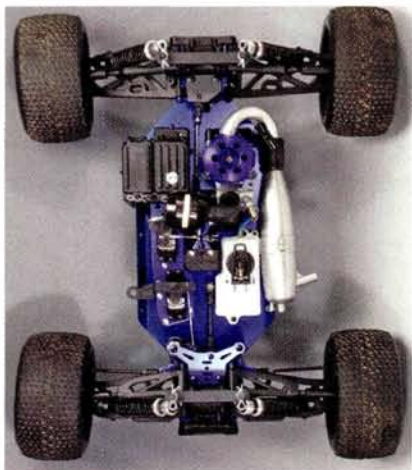
Information is limited, but Kyosho is about to release an RTR $\frac{1}{8}$ -scale truggy with an extra-long chassis, widened suspension arms and a .28 engine. It is also rumored that a $\frac{1}{16}$ -scale Mini Truggy based on the popular Half 8 Mini Inferno is just around the corner. We'll keep you posted as we learn more about these new rigs. We suspect that a "Special" version of the truggy will follow the RTR; it looks as if it has some of the components of a 7.5 buggy.



The RTR Inferno ST is low-slung and has narrow tires.



Although this is the only paint scheme we have pictures of, expect Kyosho to offer other color choices.



The ST is a 7.5-based truggy, but the chassis and arms are extra-long.



Paolo Morganti (left) and his mechanic (right) won both classes at the Great Lakes Challenge with his Serpent rigs.

PAOLO MORGANTI DOUBLES GREAT LAKES CHALLENGE

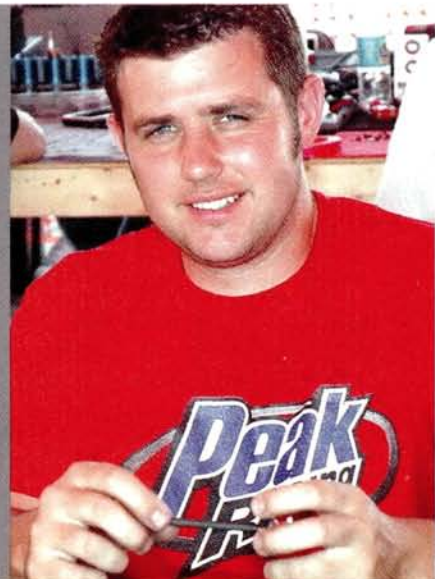
Barry Baker looked like the man to beat at the Great Lakes Challenge, an annual nitro on-road event held in Toledo, OH. Barry TQ'd in Sedan but wrecked just 10 minutes in. Josh Cyrul also succumbed to bad luck when his Kyosho V-One RRR's front one-way locked up, giving the win to Serpent's Paolo Morganti. Morganti also took advantage of Cyrul's misfortune in $\frac{1}{8}$ scale, in which a spinout and radio trouble caused Cyrul to DNF the Main and hand the win to Morganti.

$\frac{1}{8}$ 4WD				$\frac{1}{10}$ Sedan			
Fin.	Qual.	Driver	Chassis	Fin.	Qual.	Driver	Chassis
1	1	Paolo Morganti	Serpent	1	3	Paolo Morganti	Serpent
2	2	Scott Kimbrow	Kyosho	2	9	Dan Devenedictis	Kyosho
2	4	Ralph Burch	Kyosho/Delta	3	11	Jari Taskila	Kyosho

EURO BEAT

BRCA MODIFIED TOURING CAR CHAMPS

The BRCA champs were held in Barham, Great Britain, for the fastest British on-road racers. Adam Rogers TQ'd with his Tamiya TRF415MS, but unfortunately, a set of defective tires caused bad handling in the first two Mains. The problem wasn't identified until the third Main, but by then, it was too late. Tamiya/Peak Racing ace David Spashett won A1 and A2 to take the overall win with his TRF415MS; second place went to Andy Moore driving a Hot Bodies Cyclone; and third went to Glenn Doman running a Corally RDX.





MATT FRANCIS READY TO RELAX (AND SELL YOU A HOUSE)

After announcing his retirement at the IFMAR Off-Road Worlds, Matt Francis gave us some insights on his decision to hang it up after 15 years and two IFMAR titles.

RCCA: Matt, why are you retiring from racing?

MF: It has been planned for two years that my last official off-road race would be at the Worlds in Italy. It's just time for me to go and start another chapter in my life.

RCCA: Are you staying in the RC industry?

Actually, I'm going into real estate. I haven't done much because I have been too busy racing. I have already worked for a year and a half in real estate with some training, and I'll be working more with clients this winter.

RCCA: Do you plan to race in any events in '06 and beyond?

MF: Yes, but just a few: the Snowbirds, Reedy Race, Worlds and Carpet Nats. It's up in the air, but those are the races I tentatively plan to race in; I won't be racing anymore off-road at all. Pops has asked me to run a limited on-road race schedule, and since he has done so much for me, I may run a few races next year. Right now, we are testing a lot of new off-road vehicles. I may do some of that down the road as well, if Junior asks me.

RCCA: Anything you'd like to say to the racing community, or anyone in particular?

MF: I feel that I've had some influence on what people have run, and I want to thank those folks who run the products I've run for many years: good luck and thanks for supporting the companies that have supported me. I also want to thank Trinity, Team Losi, LRP and Lunsford. And thank you to Pops Losi, Gil Losi Jr., Ernie Provetti, Juergen Lautenbach, Todd Hodge, Bobby Tom and Richard Trujillo; they are the guys who have helped me throughout my career. And I also want to thank all of my Team Losi/Trinity teammates.

Good people made my job easy!

RACERS' RIDES

Mike Mayberry

>> Acura RSX

Mike Mayberry of Hitec/Multiplex uses his brand-new Acura RSX as his daily driver. It is



decked-out with a full leather interior, a 300hp engine and a 5-speed manual transmission. Along with the factory upgrades, Mike installed 18-inch wheels and a suspension kit from A-Spec as well as a K&N cold-air intake. Nice car, Mike.

By winning their respective classes at the TCS Championship, these racers were awarded all-expense-paid trips to Japan to race in the Tamiya World Championship.



TCS WINNERS

The annual Tamiya Championship Series concluded its nationwide tour with the finals at the plush Tamiya America facility at Aliso Viejo, CA. Every year, the winners in each class are awarded an all-expenses-paid trip to Japan to tour Tamiya's headquarters and to compete in the prestigious championship finals. Here are this year's winners:

GT-2 (open to all TA, TB and TL series cars): John Houda

GT-1 (open to all TA, TB, 414 and TL series cars): Corey Lewis

F1 (F201 chassis only): Edgar Fiallos

Mini (open to M-series cars): Deven White

UNDER THE HOOD

Ryan Cavalieri's J-Concepts BJ4

RACE GEAR

Radio Airtronics M11

Servos Airtronics 357

Motor Trinity Epic Shock 9x2

Cells Trinity VIS PR GP3700

Speed control LRP QC3

Receiver Airtronics

Tires Team Losi Blockhead (red)

Wheels Team Losi X2000 (red)

Inserts Stock

Gearing 17/72



FACTORY AND AFTERMARKET OPTIONS

Lunsford titanium ball studs and screws.

-2 DEG. CAMBER, 3.5-DEG. TOE-IN; WHEELBASE IN LONG POSITION WITH HUBS BACK; 0.055 SWAYBAR

GREEN SPRINGS, 25WT OIL, NO. 1 PISTONS DRILLED WITH NO. 52 BIT; 0.060 LIMITERS; LOCATION—INSIDE HOLE ON ARMS, NO. 1 HOLE IN THE TOWER

BATTERY IS AT BACK; 3¼-OZ. WEIGHTS SECURED TO CHASSIS' PERIMETER

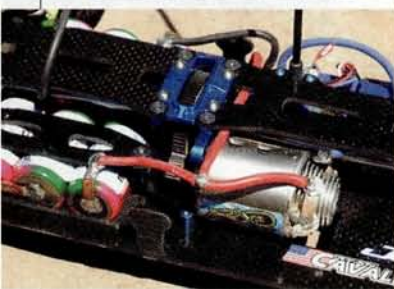
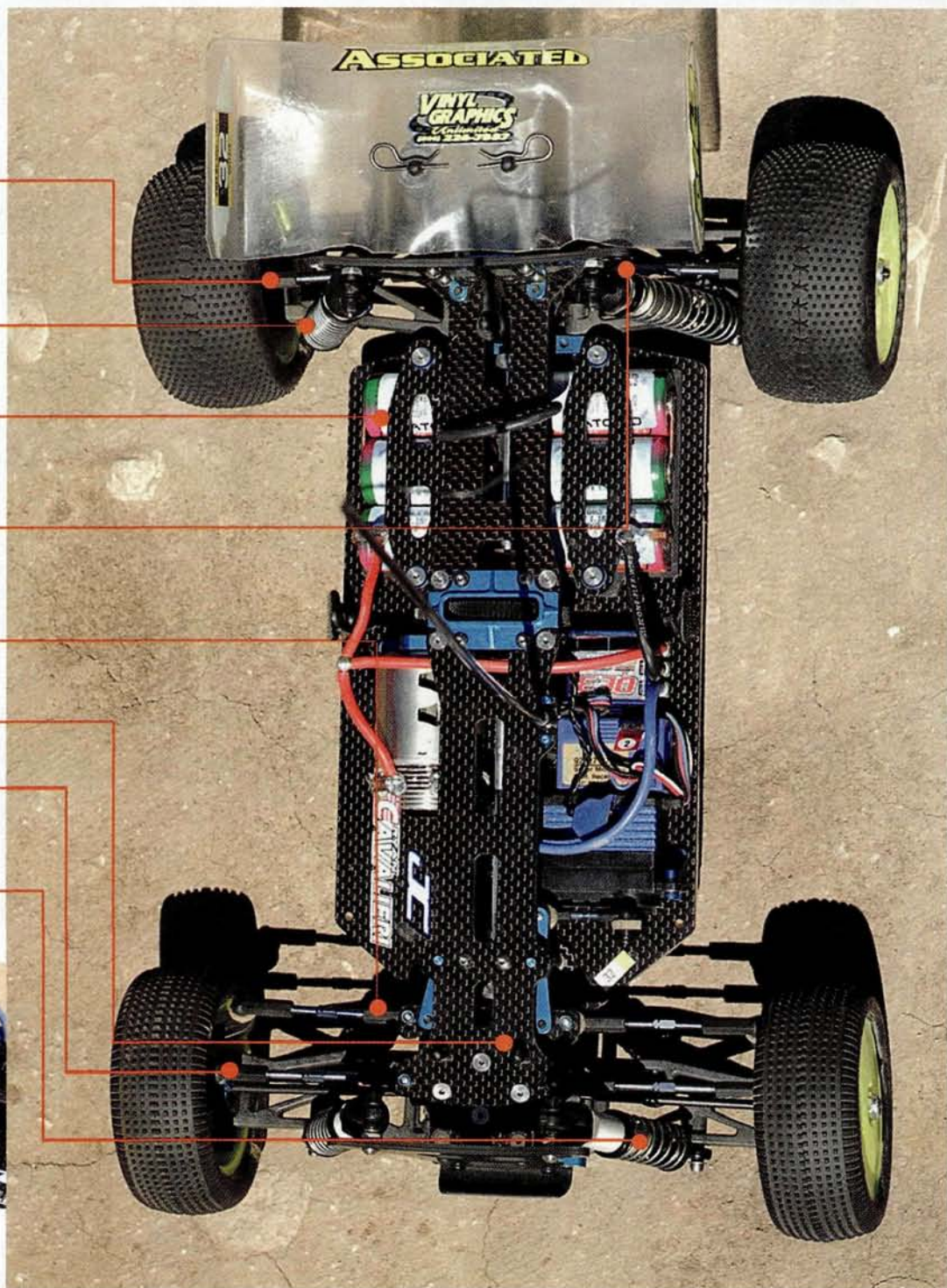
CAMBER LINK IS MOUNTED IN INSIDE HOLE W/ONE WASHER, MIDDLE (B) ON HUBS

CAMBER LINK IS MOUNTED IN OUTSIDE HOLE NEAR CHASSIS; TWO WASHERS UNDER EACH BALL STUD

TC3 FRONT ONE-WAY DIFF

-2 DEG. CAMBER, ZERO TOE-OUT, STOCK FOAM INSERTS

GREEN SPRINGS, 25WT OIL, NO. 2 PISTONS, 0.060 LIMITERS, LOCATION IS OUTSIDE HOLE ON ARMS AND NO. 1 HOLE IN THE TOWER



Cavalieri gets all his power from a Trinity Epic Shock 9-turn double motor and Trinity VIS PR 3700 cells.

Interview

DRIVER: RYAN CAVALIERI

AGE: 19

LAST BIG WIN: 2005 IFMAR 4WD OFF-ROAD WORLDS

SPONSORS: TEAM ASSOCIATED, TRINITY, J-CONCEPTS, AIRTRONICS, LRP, VINYL GRAPHICS, DARKSIDE DESIGNS

WATCH: ANDY MILONAKIS SHOW

LISTEN: MOSTLY RAP

WHEN I'M NOT RACING: I HANG OUT BY POOL OR GO THE BEACH



RC Car Action: Was winning your second consecutive world championship as exciting as winning the first?

Ryan Cavalieri: I think it was better. It was out of the country, and people filled the grandstands, which were set up for spectators. It was really cool.

RCCA: Did you have more confidence racing in Italy than in the '03 Worlds?

RC: Not really. At my first Worlds, my car was really good, and I really only raced against Kinwald. This time, five guys battled against me for the win. It was definitely more exciting this year.

RCCA: Maifield, Amezcua and others are always fast, but who were you most concerned about in Italy?

RC: Maifield, by far, because he was the fastest in qualifying and he almost TQ'd both classes.

RCCA: Racers earn serious cash by winning a world championship. What do you plan to do with the money?

RC: For sure, I plan to save the money and, hopefully, buy a house with it in the future.

RCCA: Do you plan to race for several more years as your main source of income?

RC: Definitely. It gives me a lot of freedom to go to the beach and hang out with friends, and it definitely pays the bills.

RCCA: You have accomplished almost everything in RC racing. What will motivate you in the future?

RC: Just trying to stay on top.

RCCA: You must be a competitive guy.

RC: Oh, yeah!

RCCA: Of all the classes you race, which is the toughest for you to win?

RC: Probably 2WD buggy because it's the most competitive and 2WD is the hardest to drive.

RCCA: What has contributed most to your success in RC racing?

RC: My dad and a lot of dedication.

RCCA: When you eventually quit racing, what would you like people to remember about you as a racer and as a person?

RC: That I was really fast and competitive and a nice guy.

RCCA: RC racing has its own lingo, and word has it that you and your buddies have your own sayings. Which RC sayings can you and your boys take credit for?

RC: It's a SoCal Raceway thing. "OMP"—I'm over it; "CB," "Butthair," "Kramer," "Ut-ummm"—when a hot girl walks by.

RCCA: Please finish this sentence. "If I had a dollar for every time I _____, I would _____"

RC: If I had a dollar for every time Joe Pillars cries, I would be a wealthy mofo. ■

OFIND IT

»» Go to page 243 for manufacturers' contact information

LEARN MORE AT
RC.NOMADIO.NET

NO MORE CRYSTAL RADIOS OR FREQUENCY CLIPS

Sensor uses 2.4Ghz digital spread spectrum (DSS) radio technology. Just like your WiFi network, Sensor finds a clear channel automatically without you ever having to deal with frequency crystals or glitches again. Unlike clumsy "bolt on" DSS radios, Sensor's is built to take advantage of DSS speed and accuracy.



REAL-TIME TELEMETRY

Sensor's digital radio is two way, not one way, like crystal radios. That means that for the first time Sensor gives you real time reports of the condition of your car while you are driving it. Initially we provide sensors for speed, temperature and battery voltage, but the system is expandable and we will be releasing several exciting new sensors over the coming year. And Sensor's telemetry systems are fully integrated into the controller.



IT HAS PC-CONNECTIVITY

Sensor was designed to use your PC to make it incredibly easy to program, back up, analyze and update. Once you register your Sensor at Nomadio's web site, we'll automatically tell you when new software is available to add or improve functions on your Sensor. No other R/C product offers Sensor's future upgrade capability.



HEADS-UP COMPETITION DRIVING SYSTEM

Sensor gives you important alerts about your car without requiring you to take your eyes off the track. It does this with an integrated sound and vibration system that allows you to program what you want to know and how you want to be told. You can even use headphones to keep your alerts private.

This is how **sensor** changes everything about R/C.

BRAINS AND BANDWIDTH IN YOUR R/C CAR

For the first time, there is a microcontroller brain in your R/C car. This breakthrough enables all sorts of new and interesting capabilities for R/C. For example, Sensor's transceiver brain has a built-in failsafe that gets your car safely stopped if the radio should disconnect for any reason.

IT'S RIDICULOUSLY FAST

Sensor's design team optimized its digital brain for incredible speed and accuracy. The system sends control and telemetry updates to and from the car 100 times per second, with a resolution of 4096 steps per channel. Sensor has no conversion delays like "bolt on" digital radios — it's all digital from your hands to the servos.

eHobbies

Available online at eHobbies.com



NOMADIO
digital telemetry & control systems

2nd Annual National RC **MOTOR**CYCLE CHAMPIONSHIP

TEXT AND PHOTOS BY LITO REYES

For only the second time ever,

RC motorcycle racers gathered on American soil to hold a national event. We're talking low-turn modified and brushless motors, exotic chassis material and even nitro power. Racers from all over the country came to participate, as did a team from Italy and a father/son team from Great Britain.

Right now, there are only two major manufacturers of 1/5-scale nitro and electric bikes, and only Kyosho makes 1/8-scale electrics from a line first introduced in 1988. But a new bike design, handmade in the Boston area, debuted at the event, and more manufacturers are promising full kits as well. RC bike racing is poised to explode big time, and events like this are just the beginning.

The world's
best RC bikers
converge on KZ



RACE SPECS

LOCATION: Sun Valley Speedway > Sun Valley, CA > kzspeedway.com

PRIMARY SPONSORS: Airtronics > Internet-RC.com
> Nuova Faor > RC Car Action

CLASSES: 1/8 Electric > 1/5 Electric Handout and Mod > 1/5 Nitro

QUALIFYING: IFMAR style, 2 rounds

MAINS: single A-mains

HANDOUT MOTOR: Team Associated 12x2



1/8 ELECTRIC

TOP QUALIFIER: Ian Francisco

WINNER: Ian Francisco

Only half of the huge track was used for the 10 1/2-inch, 1/8-scale bikes, but Francisco managed to pull 11 laps in qualifying, setting the TQ with an almost flawless run.

Brushless power was the name of the game and was also used by second-place finisher Ray Ruggles. When the final buzzer sounded, Francisco finished only 1/3 lap ahead of Ruggles; Ken Johnson finished third. While Francisco didn't celebrate long because he had to prepare for his next race, Ruggles showed off a bit doing wheelies with a tiny bike before pulling off the track.

1/5 ELECTRIC HANDOUT

TOP QUALIFIER: Jonathan Veal

WINNER: Jonathan Veal

Driving an innovative prototype bike made by Patrick Allevin of Boston, MA, Great Britain's Jonathan Veal battled Ian Francisco in every qualifier to lock up the TQ spot by just about 45 seconds but with the same number of laps. In the trophy dash, he stepped up the pace to win the A-main—only 8 seconds slower than the Modified A-main-winning time. "The black parts of the track are like ice, and if you mess up a single turn, it can easily add 3 seconds to a lap."

1/5 ELECTRIC MODIFIED

TOP QUALIFIER: Jonathan Veal

WINNER: John Veal

Here it gets confusing: John is the elder Veal, and Jonathan is the younger—and both are topnotch drivers. Jonathan managed the only 9-lap electric run during his first qualifier. But come trophy dash time, John showed that experience and consistency win the hardware. "A decent run, huh?" was John's typically understated British comment as he came off the drivers' stand.

1/5 NITRO

TOP QUALIFIER: Marco Verna

WINNER: Marco Verna

Nuova Faor factory driver Marco Verna turned up the track in qualifying, almost doubling the number of laps of the next nearest qualifying racer and posting lap times rivaling those of the Modified electrics—not easy to do with a nitro bike. And he had the weekend's most spectacular full-speed, back-straight 40-foot tumble while staying on his TQ pace. Steve Bowen put up a good fight in the A-main, but it wasn't enough to prevent Verna from running away with the trophy. Verna had a few words after the race, but I didn't get a good quote because he only speaks Italian.

Grazie!



1/8 Electric
Ray Ruggles (2nd),
Ian Francisco (1st),
Ken Johnson (3rd)



1/5 Electric Handout
Steve Bowen (2nd),
Jonathan Veal (1st),
Larry Dy (3rd)



1/5 Electric Modified
Jonathan Veal (2nd),
John Veal (1st),
Steve Bowen (3rd)



1/5 Nitro
Steve Bowen (2nd),
Marco Verna (1st),
John Veal (3rd)



Off-road bike exhibition

There's only one real dirt bike on the market, and RadioShack makes it: an RTR Ricky Carmichael replica from his days of racing for Honda. Bruce Murray, SV Speedway's race director, picked up five bikes at the local 'Shack and sold them at his cost or loaned them to other people to try them on the smaller dirt track. The bikes jump and handle well enough (usually) to keep control, and everyone who tried one had a blast. And since they are just about hobby grade, hop-ups are starting to appear. Check "New in the Pits" for what's coming up.

Sun Valley Speedway-- Why such a big track?

Last year's race was held at the Las Vegas Silver Bowl. It was a good size for $\frac{1}{8}$ -scale cars but was a bit tight for bikes that can't turn as tightly as cars. So a track designed for $\frac{1}{5}$ -scale cars was perfect: wide lanes, large run-off areas and high-speed straights. Just how big is Sun Valley Speedway? The back straight is 190 feet long, it's more than 20 feet wide, and it has a banked entrance and exit. Just like a full-size track, there are multiple elevation changes throughout the course. And from the two-story drivers' stand, even an $\frac{1}{8}$ -scale car looks tiny. It's one of the biggest tracks in California, and in 2003, it hosted the IFMAR $\frac{1}{5}$ -scale Worlds.



ON TRACK with Jonathan Veal

➤ First corner—Brake late into turn 1, take a wide line, and then power on through to the next corner

➤ Between turns 2 and 3—Almost straight-line the S-bend

➤ Turns 3 and 4—Brake hard around the light post, almost clip the rumble strips on turn 3, and then go wide to set up for the chute after turn 4

➤ Turn 5—Don't clip the apex, but go wide to keep up speed

➤ Turn 6—Let off the throttle just a bit going through the

banked turn, coast through half of it, then punch it as you get onto the back straight going wide to set up for turn 8

➤ Turn 9—Brake hard, lean it as tight as you can, and hope that you make the turn— it's hit or miss here

➤ Turn 10—Early apex so you can almost straight-line it to the start/finish line

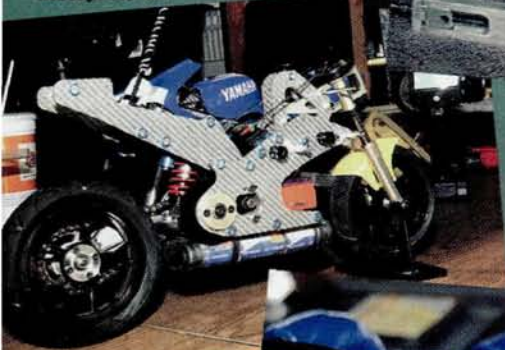


CLUBBIN' --MOTO STYLE

The largest contingent of racers came from the Radio Control Motorcycles Club based in Northern California. The RCMCC was started by Ray Ruggles in the 1990s, and among its members are Kevin Hicks, one of the hosts of the Outdoor Channel's "Inside R/C" and Sammy Bolosan, who created a nitro conversion for the Kyosho $\frac{1}{8}$ -scale bikes.



Motoproto v2



Dulian Racing
Products, FM-1e
Fiber Chassis



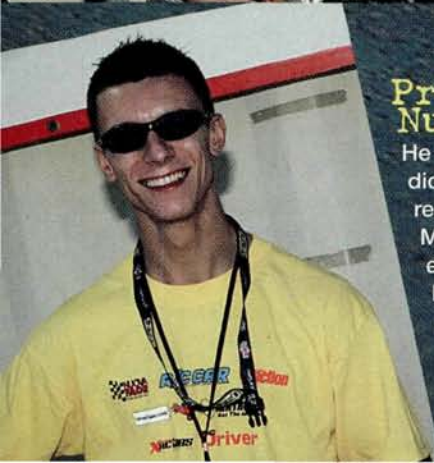
DAM Machines,
RadioShack Ricky
Carmichael hop-ups



Nuova Faor
SF501-2006



They can't get the Ricky Carmichael bike in the U.K., so John Veal tries to figure out how many of them he can fit in his suitcase.



Profile: Marco Verna, Nuova Faor factory pilot

He speaks only a few words of English, but that didn't rein in his enthusiasm and personality. He recently placed fourth in the Italian R/C Motorcycle Nationals—a huge achievement, especially when you consider the popularity of RC bikes in Italy. When asked why he wasn't racing electric bikes, his animated response was, "Batteries ... for toys!" Marco, could you be any clearer about that?

NEW in the PITS

» Motoproto v2

Patrick Allevin's new prototype bike, dubbed the Motoproto v2, is combination of CNC and handmade parts; only seven existed at the time of the race. It features a Delrin rear swing arm, carbon-fiber and composite wheels, a cantilever rear shock setup and a narrow chassis for lower lean angles. A v3 version is in the works and will be ready for sale soon.

» FM-1e Carbon-Fiber Chassis

Mike Dulian of Dulian Racing Products (drpbikes.com) showed off his new replacement chassis for Thunder Tiger's FM-1e line of electric bikes. DRP will offer the package in a variety of colored carbon-fiber stock, and it includes aluminum standoffs to replace the stock plastic ones. A lightweight racing set made from 2mm stock and a heavy-duty chassis of 3mm plates are in the works.

» RadioShack Ricky Carmichael Hop-ups

Dave Mincin of DAM Machines (dammachines.com) couldn't attend the race but sent his new RadioShack Ricky Carmichael hop-ups to show racers. A machined dual-rear swing arm and a set of aluminum sprockets for a chain drive conversion will be offered soon.

» Nuova Faor SF501-2006

The newest version of the SF501—called the 2006—was on display and then run by team driver Marco Verna. Maurizio Faini, co-owner of Nuova Faor, said that a new steering damper, carbon-fiber side plates and a titanium tuned pipe will all be part of the top-level nitro bike kit to be offered.





John Veal pulls a wheelie just before the finish line. With the power his bike had, he was able to wheelie at will.

WINNERS >>

1/8-scale Electric

Fin.	Qual.	Driver	Chassis	Motor	Battery	ESC	Radio	Tires
1	1	Ian Francisco	Kyosho Leaning Rider	Mamba 6800	GP 1100	Mamba	Air	Kyosho
2	2	Ray Ruggles	Kyosho Leaning Rider	Hymax Brushless	Lithium	Schultze	Spektrum	Kyosho
3	3	Ken Johnson	Kyosho Leaning Rider	Reedy Modified	1400 NiMH	LRP	Spektrum	Kyosho

1/5-scale Handout

1	1	Jonathan Veal	MotoProto v2	Handout	Sanyo 2400	LRP	Hitec	PMT
2	4	Steve Bowen	Thunder Tiger	Handout	INS	INS	Futaba	GRP
3	5	Larry Dy	Thunder Tiger	Handout	CBP 3300	DuraTrax	Hitec	GRP
4	3	Mike Dulan	DRP	Handout	Intellect 3600	Novak	Futaba	GRP
5	2	Ian Francisco	Thunder Tiger	Handout	Pro-Match	Novak	Airtronics	PMT

1/5-scale Modified

1	2	John Veal	Motoproto v2	LRP Brushless	GP 3700	LRP	Futaba	PMT
2	1	Jonathan Veal	Motoproto v2	Orion 10x2	GP 3700	Novak	Hitec	PMT
3	3	Steve Bowen	Thunder Tiger	Hacker Brushless	INS	Schultze	Futaba	GRP
4	4	Mike Dulan	DRP	Novak Brushless	Intellect 3600	Novak	Futaba	GRP
5	6	Ronnie Dilan	Crazy Nut Racing	Novak Brushless	INS	Novak	Spektrum	PMT
6	7	Roy Sandoval	Crazy Nut Racing	Novak Brushless	Trinity 3600	Novak	Spektrum	PMT
7	5	Kevin Hicks	Thunder Tiger	Novak Brushless	INS	Novak	Futaba	INS
8	8	Nathan Thompson	Thunder Tiger	Hacker	GP 3700	Schultze	Airtronics	GRP
9	9	Jimmy Louis	INS	INS	INS	INS	INS	INS

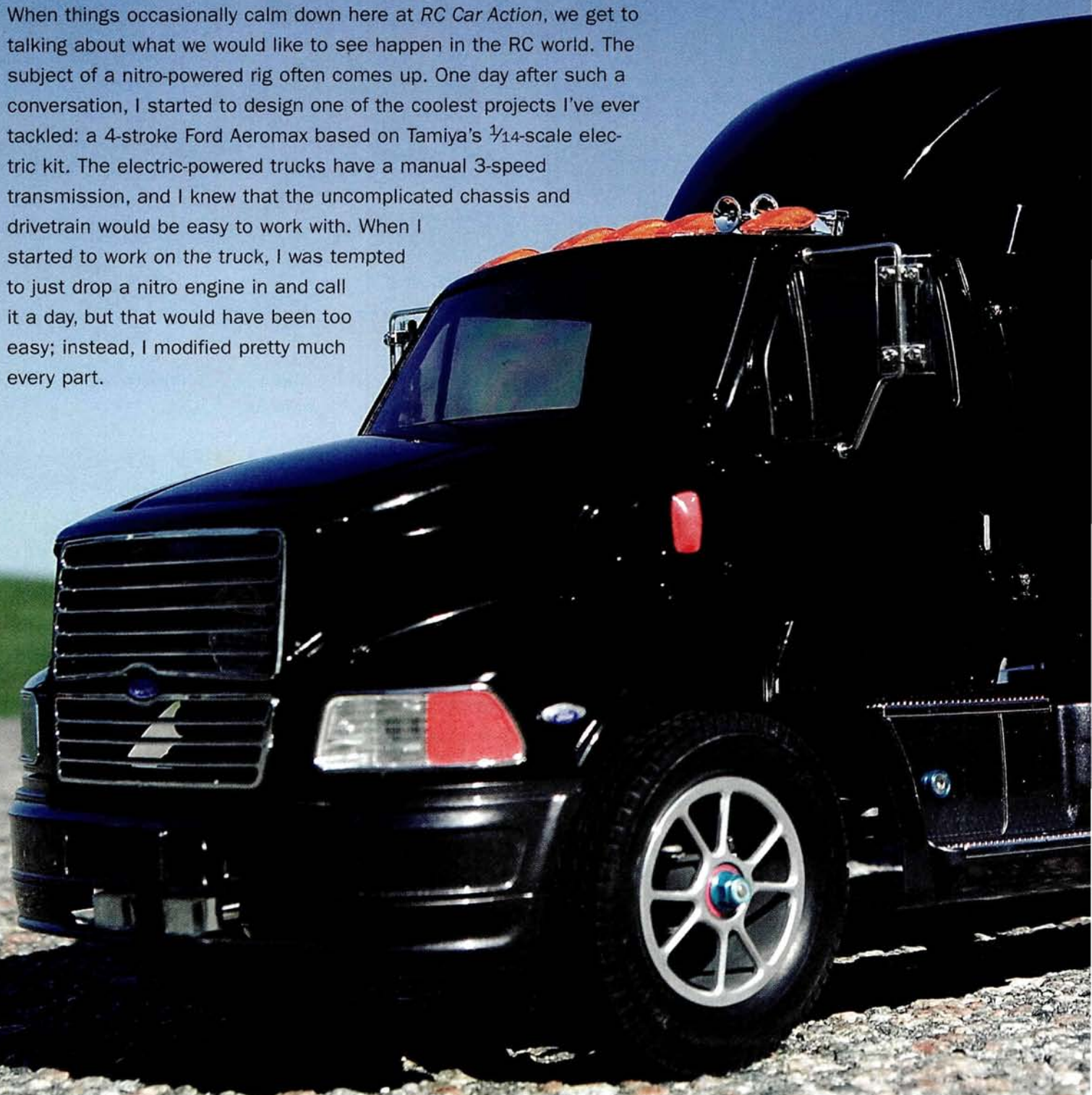
1/5-scale Nitro

1	1	Marco Verna	Nuova Faor	Novarossi	Maxxis	Airtronics	Nuova Faor
2	4	Steve Bowen	Nuova Faor	Rex	Blue Thunder	Futaba	GRP
3	3	John Veal	Nuova Faor	Picco	Traxxas	KO Propo	GRP
4	6	Lorenzo Schley	Nuova Faor	Rex	INS	Airtronics	INS
5	5	John Espinor	Thunder Tiger	Thunder Tiger	O'Donnell	Airtronics	Thunder Tiger
6	2	Kevin Hicks	Nuova Faor	Sirio	O'Donnell	Futaba	INS ■

INS = Information not supplied

Project NITRO HAULER

When things occasionally calm down here at *RC Car Action*, we get to talking about what we would like to see happen in the RC world. The subject of a nitro-powered rig often comes up. One day after such a conversation, I started to design one of the coolest projects I've ever tackled: a 4-stroke Ford Aeromax based on Tamiya's $\frac{1}{14}$ -scale electric kit. The electric-powered trucks have a manual 3-speed transmission, and I knew that the uncomplicated chassis and drivetrain would be easy to work with. When I started to work on the truck, I was tempted to just drop a nitro engine in and call it a day, but that would have been too easy; instead, I modified pretty much every part.







3-SPEED TRANSMISSION

When I started, I had a 2-speed tranny in mind, but then I got my hands on a Kyosho Mad Force and saw its simple 3-speed transmission. Perfect! I mounted it using one of the stock Mad Force mounts on one side and a Kyosho 1/8-scale buggy center diff mount on the other side. The diff mount accepts a bearing that's too large for the 3-speed's shaft, so I machined a spacer to fill the gap between the bearing and the shaft. Acer Racing ceramic-nitride bearings completely support my rig's drivetrain.

CHASSIS

The only stock parts on the chassis are the frame rails and the front and rear endcaps. I machined slots in the front ends of the chassis plates so I'd be able to adjust the engine for proper gear mesh. I needed a place to mount the receiver and receiver pack, so I attached a strip of carbon-fiber plate to the bottom of the frame rails toward the back of the truck. I cut two sections out of the plate to make enough clearance for the top of the axles. I also used carbon fiber on the top of the chassis to hide all the gear between the frame rails.

REVERSE

One of the cool things about the stock electric Aeromax is that it has reverse, and you can back into a trailer, hook up and drive off with it, so I wanted my truck to have reverse. I used a HPI Savage reverse module to make that happen. Unfortunately, there wasn't anything to bolt it to, so I had to modify the unit to mount it on the underside of the chassis behind the 3-speed. I had two problems with the reverse module: the output shaft was too long, and only one bearing supports the output shaft. I cut down the output shaft and machined an adapter that accepts a driveshaft and fits inside a bearing; I also machined a carbon-fiber external bearing mount. A Traxxas T-Maxx driveshaft connects the 3-speed to the reverse module and the reverse module to the rear axles.



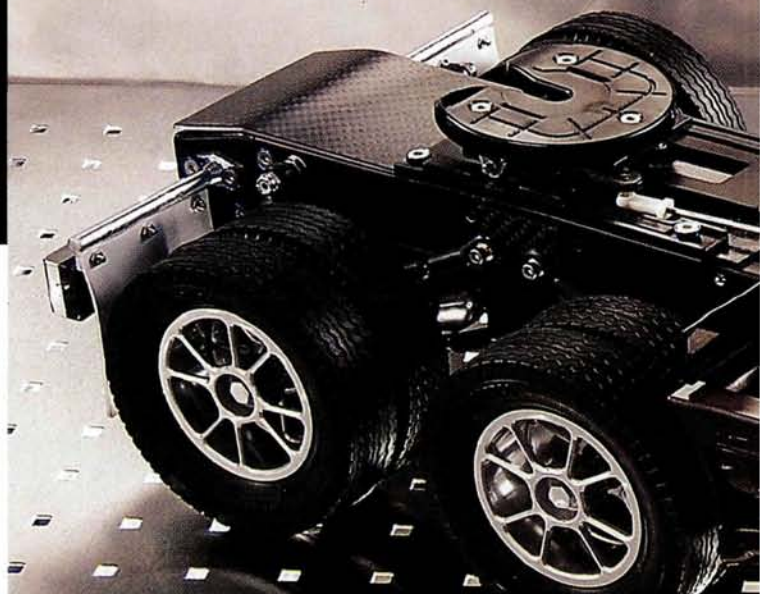
A modified HPI Savage reverse module lets the rig back up to meet the trailer.



Left: The 3-speed is from a Kyosho Mad Force.

RADIO

This truck has four functions that I had to operate from the radio. I could have picked up a 4-channel stick radio, but whenever I use a stick radio, I end up crashing because I'm not used to driving with sticks. For this project, I went with a Hitec/Multiplex Profi Car 403 pistol-style radio that controls the throttle/brake, steering, the fifth wheel and reverse.



ENGINE

For this project, there was only one choice: an O.S. .26 4-stroke with a pull-start. It's perfect for several reasons: 4-strokes aren't as finicky to tune as 2-strokes; it doesn't need a tuned exhaust system to run properly; and it sounds great. I had to machine custom engine mounts and slot the chassis so that I could mount the engine in my truck.

Below: Hardcore Racing's Phazer wheels were narrowed to fit the stock Tamiya tires.

WHEELS

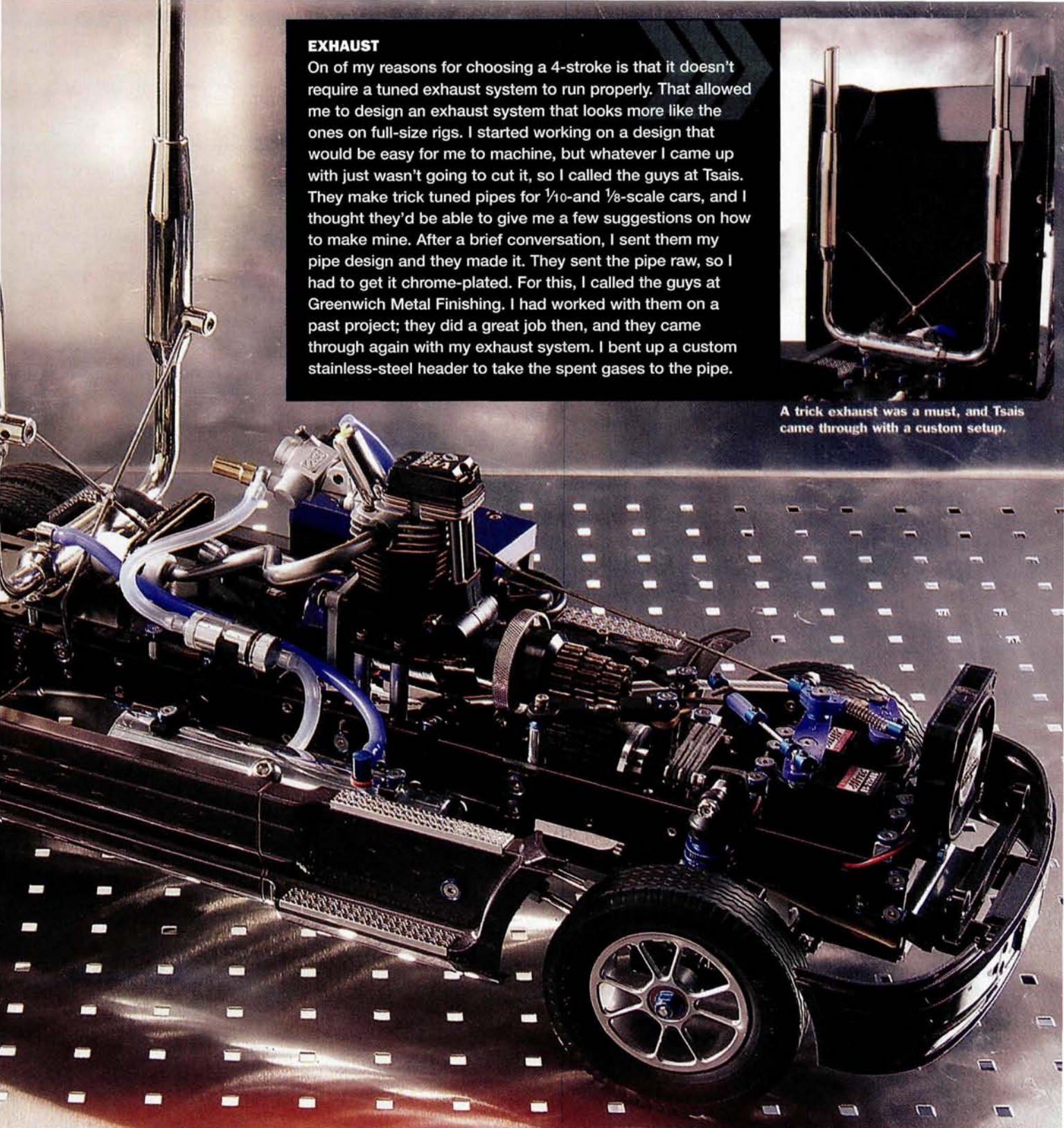
For the wheels, I wanted something different. You can buy aftermarket wheels for these Tamiya rigs, but they all look pretty much the same. I went to Hardcore Racing, and I chose Phazer touring car wheels, which I narrowed to accept the stock rubber—not something I wanted to do with \$250 worth of rims; screw one up, and I'm out \$50 for



EXHAUST

On of my reasons for choosing a 4-stroke is that it doesn't require a tuned exhaust system to run properly. That allowed me to design an exhaust system that looks more like the ones on full-size rigs. I started working on a design that would be easy for me to machine, but whatever I came up with just wasn't going to cut it, so I called the guys at Tsais. They make trick tuned pipes for $\frac{1}{10}$ - and $\frac{1}{8}$ -scale cars, and I thought they'd be able to give me a few suggestions on how to make mine. After a brief conversation, I sent them my pipe design and they made it. They sent the pipe raw, so I had to get it chrome-plated. For this, I called the guys at Greenwich Metal Finishing. I had worked with them on a past project; they did a great job then, and they came through again with my exhaust system. I bent up a custom stainless-steel header to take the spent gases to the pipe.

A trick exhaust was a must, and Tsais came through with a custom setup.

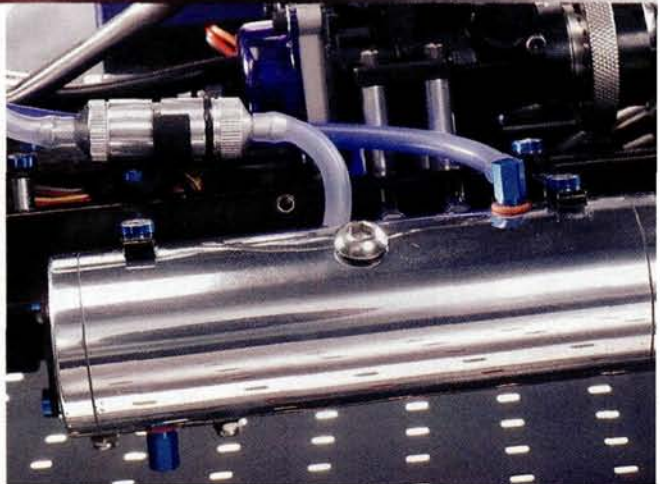


another pair. I machined the front wheels to accept ball bearings, and I enlarged the center holes on the outside wheels at the rear to accept my custom-made wheel nuts. After doing this machine work, I threw the rims into my tumbler for a few days to remove all the machine marks.

FUEL TANKS

The fuel tanks on the sides of the chassis are machined out of aluminum billet, and they aren't just there for looks. I designed them to hold the fuel and smoke oil. The right tank holds the nitro, and the left tank carries the smoke oil.

The fuel tanks are machined aluminum and completely functional





SUSPENSION

Converting the truck to nitro power is cool, but I had to take this project a little further. I decided to change the suspension by replacing the stock thin shocks with a set of much better-looking Team Associated TC4 shocks—but without the springs. Almost before I knew it, I was at the computer and designing a 4-link suspension. Starting with the front end, I designed a C-shaped aluminum mount that fits over the front axle's leaf-spring perch. This provides a mounting location for the suspension links and the front shocks. A screw that goes through an existing tapped hole in the axle holds the part in place. For the rear, I designed a carbon-fiber mount that's installed between the two axles, and I ran some links from the axles to the mount.

An adjustable 4-link setup replaces the stock leaf springs.

REMOTE STARTING

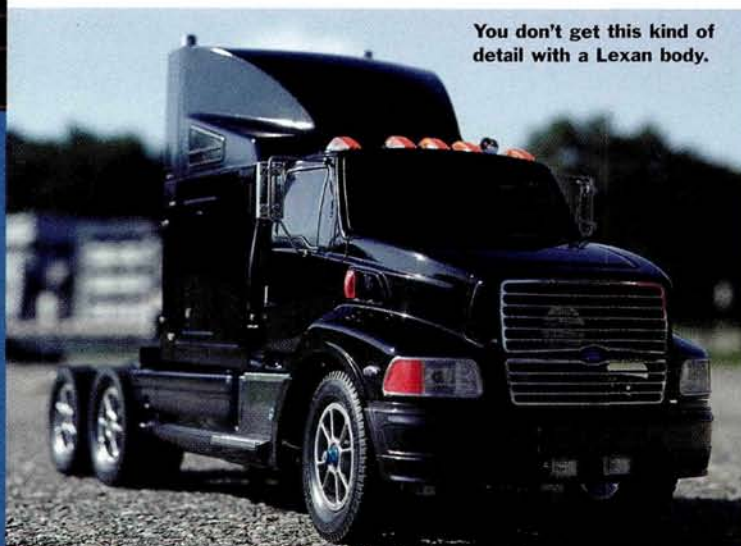
The truck's ABS-type molded-plastic body is painted on the outside, so you risk damaging the paint whenever you remove the body. I had to find a way to start the engine without removing it.

I removed the pull-starter from the engine and installed a Sullivan Tiger Drive in its place. The Tiger Drive is basically a 90-degree plate with a set of bevel gears. One gear drives the crankshaft, and a hex shaft spins the other. This system allows you to start the engine with a drill, and you can point the input shaft any way you want; I installed my Tiger Drive with the input shaft facing downward so that I can start the engine from underneath the truck. A blue, see-through, plastic cover protects the gears on the Tiger Drive. A Sullivan remote Ni-starter system allows me to heat the glow plug without removing the body. One end clips onto the glow plug, and the other end is mounted on the chassis' underside so I have easy access with my Ni-starter (but you can mount it wherever you want).

BODY BEAUTIFUL

I used the Ford Aeromax kit's stock ABS plastic body. It has great details that you won't find in a Lexan body. I modified it slightly before I painted it. I filled all the holes in the back of the cab with body filler and the plastic plugs Tamiya provides. Finally, I cut out a small section in the back of the cab to make room for the header and exhaust and the smoke-oil lines. Since this body isn't clear, it had to be painted on the outside, and for that, I went with Tamiya's Lacquer paints. I gave the top body section three coats of black paint and the bumper and side skirts, three coats of Charcoal. I finished it with three coats of clear. I give Tamiya credit for this paint; the finish is straight out of the can (yes, can) and required very little waxing to get that shine.

You don't get this kind of detail with a Lexan body.



TANK TRAILER

A good-looking truck like this has to have an equally handsome trailer to pull. The Tamiya tank trailer's center section is polished stainless steel, and it's complete with all kinds of details. I also outfitted it with Tamiya's motorized support-leg kit. Now I can back my truck up to the trailer and attach and detach it using only the radio.

That polished finish may as well be chrome. No one does this stuff as well as Tamiya.



COOLING

Since my 4-stroke engine would be covered by a thick plastic body, I was concerned about cooling. With a 2-stroke engine, I wouldn't be as concerned because it would have a large heat-sink head. O.S. doesn't equip its 4-stroke car engines with heat sinks, so airflow over the block is very important. I bolted a small brushless fan to the front of the chassis and directed the airflow towards the engine. I also cut out the molded grill that was under the chrome grill to allow air to flow directly into the fan while the truck is running. I covered the rear of the body with a section of screen to help conceal the fan. To power it, I used 8 receiver battery cells to make my own compact 12V rechargeable pack; it sits between the frame rails under the fifth wheel.

A RadioShack brushless fan flows air through the front of the body to the engine.





No Photoshop
here, that's
real smoke!

LET THERE BE SMOKE

A 4-stroke puts out a fair amount of smoke but nowhere near as much as the real rigs spew. A couple of airplane editors here at the office introduced me to the world of smoke pumps. They use them to allow their airplanes to make smoke trails and to look more realistic. I decided that the pump unit from Slimline would be perfect for my rig. It's fairly small, and I fit it inside the body by mounting it at a slight angle. The unit has a speed control that operates an electric pump to send a little smoke oil to the exhaust.

PERFORMANCE

Believe it or not, the last thing I wanted to do was to run this truck. One glitch and it's over; that hard plastic body doesn't bounce back like a Lexan body does. Before putting the body on the chassis, I ran the truck to make sure that everything worked and that the engine was properly tuned. When everything checked out, I installed the body and had some fun. It's cool enough just watching the truck idle, but when you get on the throttle and see all that smoke coming out of the pipes, you have to grin. It didn't take the engine much effort to spin the rear tires, and I got nervous in a hurry as the truck shifted through the

gears and sped away. Things got a little hairy when I nailed the brake, because I had a little too much throw set on the servo, and it instantly locked the rear wheels, and that shook the truck up a little. After bringing the truck to a stop, I

figured it was a good time to try reverse; it worked perfectly. I brought the truck back to where I was standing, backed it into the trailer, hooked it up and raised the trailer legs. The clutch didn't like the weight of the trailer very much; it slipped a little when I got on the throttle, but when it started to move, it didn't have any trouble maintaining speed. ■

FIND IT

»» Go to page 243 for manufacturers' contact information.

THE PARTS

My project truck parts list is so long that I can't fit it all in this article. I'll tell you the more important items; for the rest, go to our website: rccaraction.com.

TAMIYA

Ford Aeromax—item no. 56309, \$220

SUSPENSION

TEAM ASSOCIATED

Threaded shock kit TC3—3962, \$37

ENGINE & ACCESSORIES

O.S. ENGINES

FS-26S-C II 4-stroke car engine—34170, \$199

KYOSHO

Super-capacity fuel filter—1876, \$4 each

4-stroke fitting kit—FZW-30, \$130

RADIO SHACK

12V brushless micro-fan—273-240, \$13

DRIVE TRAIN

HPI

Savage reverse module—87032, \$33

ELECTRONICS

HITEC/MULTIPLEX

Profi Car 403 radio—M25241, \$280

BODY, WHEELS & TIRES

HARDCORE RACING

4 Phazer TC wheels—HCR00244, \$50/pair



Make Custom Mo

MODIFIED MONSTER MEATS

The competition in monster truck racing is getting progressively tougher, and to win a big race, your truck must be set up for the track you'll race on. Using only one type of tire for all tracks just won't cut it, and sometimes, you just can't find that perfect tire. What then? I don't know about you, but I break out the glue and scissors and make my own monster truck tires. Modifying them isn't difficult, and having the right tires can make a huge difference to your lap times. Follow these easy steps.

STEP 1 PLAN BEFORE YOU CUT

You can make monster truck tires by cutting and gluing $\frac{1}{10}$ -scale truck tires. If you want to reduce sidewall height, cut a few rows out of the middle of a tire, and then glue the halves back together. If you combine different treads, you will replace one section of a tire with another.



Three $\frac{1}{10}$ -scale truck tires were used to make this monster truck tire.



A good pair of sharp scissors is a must for cutting tires. You'll also need paper towels or rags and tire glue with a thin applicator tube.

TIRE-MODIFYING TOOLS

Modifying tires requires the right tools. To begin, you'll need a really good pair of scissors. The scissors that have been in your box for ages and that you've used to cut everything under the sun probably will not work too well. Buy a new pair, and keep them only for cutting tires. Parma, Dynamite and Associated both make good scissors for this. You will also need a fresh bottle of glue with a thin applicator tube to dispense it. Pro-Line's new Premium Blend CA and Losi's Tread Lock work well. Don't try to attempt this without a tube, or the glue will come out too fast and make a mess. Also, be sure to have paper towels handy to wipe off excess glue.



A section of the tire on the left has been cut out to narrow it. Compare it with the stock tire on the right.

Monster Truck Tires

STEP 2. MAKE THE CUT

When you have your ideas sorted out, take out your sharp scissors and start cutting. Cutting is probably the most important part of tire modifying, so be sure to take your time and cut straight. If you plan to make a tire narrower, it's better to cut two 1/2-inch rows out of the ends of the tread (nearest the sidewall) than to cut a 1-inch section out of the center.



Take your time while cutting; perfectly straight cuts are critical when you make custom tires.



Cutting two 1/2-inch rows off both sides of a tire is better than cutting a wider section out of the center.

Know your application

If the track is really wet and muddy, combine two different treads to make tires that provide traction but don't get caked up. If you're on a hard-packed, high-bite track, you need a tire that doesn't flex very much. Make narrower tires with a lower profile. For a very high-traction track such as clay, modify 1/10-scale truck tires to fit your monster truck's wheels.

Custom tread ideas

Here are a few combinations and ideas to get you started, but try whatever comes to mind. This method even allows you to use two or more different tread compounds in one tire.



For muddy tracks, combine Pro-Line Dirt Hawg and Masher tires.



On well-groomed tracks, tires with a lower profile tire might work best. An inch of tread has been removed from this Crime Fighter tire to narrow it.



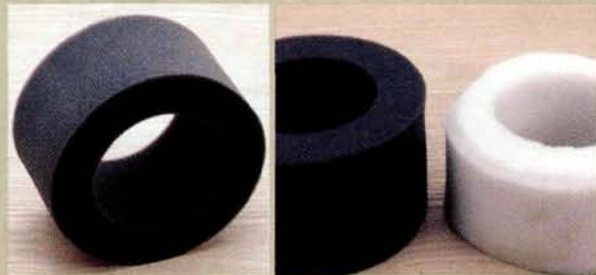
If you race on a hard-packed track, use Pro-Line Holedshot 1/10-scale truck tires; I used three to make this tire.



For more precise steering, use narrower front tires. Just cut a few rows out of the middle and glue the halves back together.

Foam insert options

Chances are, if you need custom tires to suit your track, they will need different foam inserts. Most stock inserts are soft and break down fairly quickly. Pro-Line, Trinity, Traxxas and several other companies offer firm foam inserts. Before you glue the tire, mount the inserts on the rim and decide whether they should be trimmed. On a bumpy track, a rounded foam from which the edges have been trimmed makes a truck more stable. If you narrowed your tires, you'll need narrower foams, or the tires will bulge.



Use firm foam inserts such as the Pro-Line gray inserts shown here.

The insert on the right has rounded edges to provide a more stable ride on bumpy tracks.

FIND IT

Go to page 243 for manufacturers' contact information



Glue a small section at a time. Make sure that the glue joint is perfectly straight.



After the glue has dried, gently pull on the seam to check the glue joint. If some spots come apart, put a little more glue on these areas.

STEP 3. GLUE IT

With everything trimmed nicely, get your glue ready. Insert the included tube into the tip of the glue bottle and make sure it isn't clogged. Apply a little glue—just enough to coat the sections of rubber you will be gluing. Join an inch at a time to give you time to line everything up before the glue dries. Having applied the glue, slowly bring the halves together while trying to keep the glue joints straight. It takes a while to get it right, so consider practicing on scraps first. If a bunch of glue squeezes out at the top, wipe it off before it dries. When the glue has had time to dry, gently pull on the tire around the glued seams to see whether they come apart in any areas. If they do, use your glue again. Tires that don't have enough glue will come apart quickly, and gluing dirty tires back together is nearly impossible. ■

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Tamiya



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CEN .46 Genesis



Maximizer
PRODUCTS INC



SAVAGE 25

**Integy & MRC
Chargers**



**Tekin is
Back!**



**Golden Horizons
Monster GT Head**



**Picco 27
.27 Engine**



**Picco .27 & .26
small block for
Revo & Maxx**



SOKMO



**.23 Revo
Sirio**

- | | | |
|-----------------|---------------|-------------|
| Airtronics | Integy | Raceway Mfg |
| Alien | IRS | Ram |
| Associated | Jackal | Robinson |
| Autographics | Kimbrough | Rossi |
| Bolink | LRP | RPM |
| BRP | Lunsford | SVM Crono |
| Gen | Megatech | Serpent |
| GRD (Cobra) | MIP | Shock Socks |
| Comp. Ecol | Motor Saver | Siro |
| Cutting Edge | MRC | TA Emerald |
| CVEC | New Era | Tamiya |
| Dans | Novak | Team Orion |
| Dubro | Pactra | Teddy's |
| Duracomm | Paragon | THS |
| EPIC | Parma | Traxxas |
| Fantom | Pole Position | Trinity |
| Golden Horizons | Powerline | TRC |
| Hakko | Pro-Line | Weller |
| Hardcore | Protoform | Wiha |
| Hot Bodies | RCMG | Wolfe |
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Trick out Your Pit Box

STUFF IT IN STYLE

Whether you race every Sunday or just lug your gear out to the field or parking lot to play around, a well-stocked pit box is a must. But as your shop-away-from-the-shop, there's a lot more you can do to set up your box beyond jamming tools and spare parts into the drawers. Here are some ways to carry more gear, increase its convenience and generally trick out your pit box.



Even when I have plenty of spare body clips, I hate to lose one.

MAGNETIC MAGIC

Run a strip of adhesive-backed magnet material across the front of your box, and you'll always have a place to put those body clips, E-clips and other easily lost bits. I don't use the magnet much when I have a full-on pit table set up, but when I'm out running a car in an open parking lot, the magnet sure comes in handy.



Now you can keep those small parts organized without them eating up space inside your box.

MORE STORAGE

Need more small-parts storage but you're out of room in your box? Just put small parts boxes on the lid of your big box. You can Shoe-Goo the boxes in place, or if you want them to be removable, use Velcro®. A few words of caution: make sure you choose boxes with lids that snap securely, since they'll be upside-down when you open your toolbox's lid.



Manuals, calculator, clock ... always at the ready.

WORK THE LID

Think of the inside of your box's lid as a laptop screen, and put your most-needed info tools there. I Shoe-Goo'd a CD case to the lid to hold my speed-control manuals and used Velcro® to keep a calculator handy, while a stick-on clock keeps me on time. You could also mount gear-ratio and spring-rate charts inside the lid using clear contact paper.

You can Shoe-Goo the power strip, or use self-tapping screws.



POWER UP

You can untangle your pit by mounting your power strip directly on your toolbox. It will be one less item to keep track of, and when you need to juggle plugs, they'll be within easy reach.

FUEL TO GO

This is an old "Pit Tip." A bicycle water-bottle cage is perfect for carrying your fuel bottle with your pit box. Use self-tapping screws to secure it to the side of your box, making certain that the screws don't interfere with the drawers.



If the cage doesn't hold your bottle tightly, just bend it slightly inwards.



Your fingers will thank you.

HANDLE IT

If your box has one of those thin, finger-severing handles, pop it out of the lid and slip a foam bicycle grip over it. Much better.



Let there be light!

LIGHTS! TOOLS! ACTION!

If you race indoors and the pit space is dim, consider adding a light to your box. Small battery-powered fluorescent models are inexpensive and easy to attach to the front or sides of your box.

Good ol' spray paint: makeover in a can.



PAINT IT

If your box looks tired, hit it with Krylon's Fusion paint; it's designed specifically to bond with plastics without priming (but cleaning the box first is a good idea). Check out the before and after pics. ■



FIND IT

Go to page 243 for manufacturers' contact information

IMAGE WERXS/ SHADY ADVERTISING Race Tent

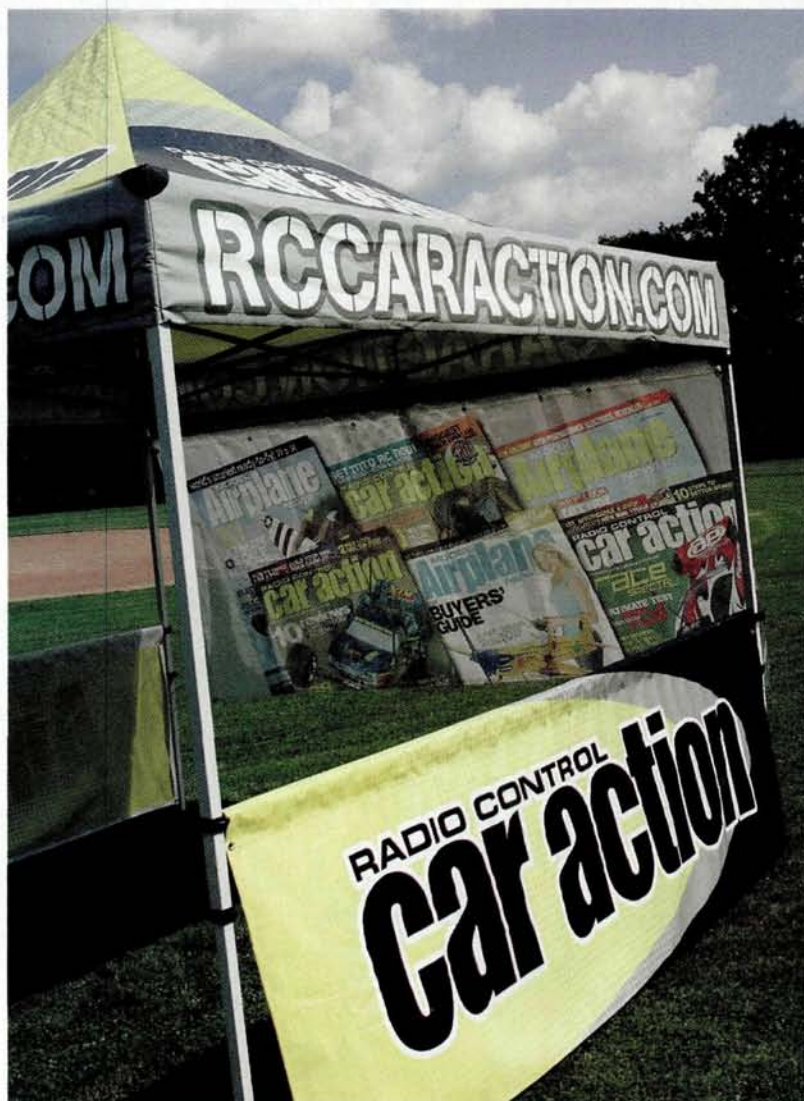
To beat the heat and show our colors at races and other events, we hooked up with Image Werxs/Shady Advertising and put together a custom race tent. The 10x10-foot, heavy-duty vinyl canopy can be printed with the artwork of your choice, and it's an excellent way for your club or shop team to represent at big races. Here's how it worked out for us.

The canopy's frame is made of square aluminum tubes with molded-plastic connectors and interlocking end pieces. Velcro® is riveted to the tops of the corner legs to secure the canopy. The four corner legs telescope and can be set at a number of heights. The frame is about five feet long when fully collapsed and weighs about 60 pounds. A carrying bag is included, but it's a handful for one person to carry, and not a good fit in most trunks; a pickup truck or SUV makes a much more practical transporter.

When you arrive at the track, you'll need two people to open the frame, but four (one at each corner) make it easier. Walking the four legs outwards unfolds the upper support structure. Once in their outermost positions, the legs are locked with heavy-duty, spring-loaded pins, and their height settings are secured with spring-loaded locking pins.

With prices ranging from \$1,200 to \$2,400 depending on size (10x10-, 10x15- and 10x20-foot versions are available), the canopy isn't cheap, but neither is its construction. It's built with thicker-gauge tubing and more robust fittings than the inexpensive "pop-ups" found at sporting goods stores, and although the heavy-duty construction adds weight, the result is a highly stable and rugged structure. Although it is expensive, the value of the advertising it provides cannot be discounted. Whether you have a business or just want a heavy-duty tent to help represent your RC club at the next big race, the Image Werxs/Shady Advertising canopy is a solid choice.

Image Werxs/Shady Advertising
divisions, Graphic Technology
Inc. (619) 596-7795;
imagewerxs.com



Acer Racing (310) 472-8090; aceracing.com

Airtronics (714) 978-1895; airtronics.net

A-Tech distributed by Schumacher USA

Atsushi Hara Racing Products (949) 753-1099; hotbodiesonline.net

CEN Racing (714) 792-1923; cenracing.com

Dremel Tools (800) 437-3635; dremel.com

DuBro Products (800) 848-9411; dubro.com

DuraTrax distributed by Great Planes; duratrax.com

Epic distributed by Trinity Products Inc.

Factory Team distributed by Team Associated

Futaba distributed exclusively by Great Planes; futaba-rc.com

General Silicones Group (626) 338-3815; gsracing.com

Global Hobby Distributors (714) 964-0827; globalhobby.com

Great Planes Model Distributors (800) 682-8948; greatplanes.com

Greenwich Metal Finishing (203) 629-8479

GS Racing distributed exclusively by General Silicones Group

Hardcore Racing Components (661) 294-5032; racinghardcore.com

Hitec RCD Inc. (858) 748-6948; hitecrad.com

Hobbico distributed by Great Planes; hobbico.com

Horizon Hobby Inc. (800) 338-4639; horizonhobby.com

HPI Racing (949) 753-1099; hpiracing.com

Hudy USA contact RC America: (800) 519-RCA1; hudy.net

Jammin Products distributed by OFNA Racing

JR Racing distributed by Horizon Hobby

Kyosho Corp. of America (800) 716-4518; kyoshoamerica.com

LRP distributed by Team Associated

Lunsford Racing (541) 928-0587; lunsfordracing.com

Magma Intl. (905) 886-1808; magmarc.com

Model Rectifier Corp. (MRC) (732) 225-2100; modelrectifier.com

Neo Grafixx (860) 796-3221

Novak Electronics Inc. (949) 833-8873; teamnovak.com

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Tamiya TNX performs rare feat at Monster Madness

ENFIELD, CONNECTICUT — Tamiya America TRF drivers, Jimmy Jacobson and David Jun, have been a powerful one-two punch. They finished 1st and 2nd at the 5th Annual Pro-Line Maxx Challenge Race in May. Last year, they swept the top spots at Monster Madness II. And this year, they defended their top titles at Monster Madness III. But what's their most remarkable achievement?

At Monster Madness III, Jacobson and Jun also finished 1st and 2nd in the big-block class (.21+ engines), four laps ahead of third, using their same trucks and engines that led them to victory in the small-block class division (.15 - .18 engines). It's a rare sweep, from a unique team and truck — the Tamiya TNX.

The winning formula for Jacobson and Jun included some new, easy-to-install hop-ups, like a newly designed Ball-Pivot Suspension, MIP/Tamiya Blue



Jimmy Jacobson and David Jun finished 1st and 2nd, in both the small- and big-block classes, using the same trucks, and the same engines.

CVDs, Tamiya Titanium Screws, Tamiya's new Blue Anodized Main Aluminum Chassis, Pro-LinePowerstroke Shocks and Pro-Line Crime-fighter Tires.

Many of the racers at Monster Madness could not believe the power of the Tamiya engine and were curious about its minor hop-up.

TWO STARS DOMINATE THE TOP NITRO TRUCK CLASSES

With added tuning versatility, plus stronger and lighter hop-ups, the Tamiya TNX has the power and performance to put you on the podium. Get down to your local hobby store, and roll with the winner — **Tamiya TNX.**



advertiser index

Ace Hardware Hobbies 204
acehardwarehobbies.com

Ace Hobby Distributors Inc. 42, 43
acehobby.com

Acer Racing 103
acerracing.com

AirBorne Models 184
airborne-models.com

Airtronics 119
airtronics.net

Boca Bearing Co. 120
bocabearings.com

Byron Originals 182
Byronfuels.com

Castle Creations 162, 163
castlecreations.com

CEN/Genka Trading Corp. 122, 123
cenracing.com

Custom Works 203
customworksrc.com

Deans Connectors 240
wsdeans.com

DuBro Racing 223
dubro.com

DuraTrax 19, 63, 101
duratrax.com

ERI Associates 230

Extreme Standz 215
extremestandz.com

FHS/Red Max Fuels 238
members.aol.com/fhsoll

First Hobby 238
firsthobby.com

FMA Direct 246
fmadirect.com

Fusion Batteries 195
fusionbatteries.com

Fusion Motorsports 179
fusionmotorsports.com

Futaba 12, 13
futaba-rc.com

General Silicones Group 157, 201
gsracing.com

Hitec/RCD Inc. 41, 175
hitecrd.com

Hobby People 224, 225, 226, 227
hobbypeople.net

HPI Racing 44, 45, 68, 69, 194
hpiracing.com

HyperHobbies Inc. 214
roaddome.com

Imex Model Co. 124, 125
imexrc.com

IWaver 77
lwaverusa.com

JR Products 173
jrradios.com

K&S Engineering 238
ksmetals.com

Kyosho C2, 3, 28, 29
kyoshoamerica.com

Megatech 38, 39
megatech.com

Model Rectifier Corp. (MRC) 17
modelrectifier.com

New Era Models 242
neweramodels.com

NitroHouse.com 231

Nomadio 192
nomadio.net

Novak Electronics 25, 47
teamnovak.com

NYC Hobbies 247
nychobbies.com

O.S. Engines 181
osengines.com

OFNA Racing 52, 53, 58, 59, 70, 71, 79, 89, 94, 95
ofna.com

Omni Models 221

Parma/PSE 185
parmapse.com

Peak Racing Products 55
peakmotors.com

Performance Devices Inc. 214
performancedevices.com

Power Racing Products 160, 161
powerracingrc.com

Pro-Line USA C3, 4, 5, 6, 7, 248, 250
prolineracing.com

RAm; Radio Controlled Models Inc. 214
radiocontrolledmodels.com

RC Hub 205
rchub.com

RC Solutions 239
rc-solutions.com

RC Superstore 215
rcsuperstore.com

RC Store 244, 245

RB Innovations 214
rbinnovations.com

RPM 193
rpmrcproducts.com

Robinson Racing Products 64, 65, 66, 67
robinsonracing.com

Schumacher USA 133
racing-cars.com

SMC Racing 171
smc-racing.com

Secktrum 14, 15
Spektrumrc.com

Stormer Hobbies 232, 233, 234, 235
stormerhobbies.com

Tamiya America Inc. 10, 11, 82, 83, 243
tamiyausa.com

Team Associated 8, 9, 20, 21, 30, 31, 48, 49, 60, 61, 80, 81, 91, 121, 159
teamassociated.com

Team Losi 22, 23, 27, 50, 51
teamlosi.com

Team Orion 32, 35, 37, 186
teamorion.com

Tempgun.com 205

TNT Mods 238
tntmods.com

Tower Hobbies 183, 206, 207, 208, 209, 210, 211, 212, 213
towerhobbies.com

Traxxas Corp. C4, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147
traxxas.com

Vantage Racing 180
vantageracing.com

Venom Racing 223, 239
venom-racing.com

VXR Racing 215
Vxrracing.com

Werks Racing 92, 93
werksracing.com

Wingtote 184
Wing-tote.com

XRAY 189
teamxray.com

XTM 57, 104, 105, 106, 107, 108, 109, 110, 111
xtm.globalhobby.com

XXX-Main Racing Inc. 131
xxxmain.com

Yokomo Ltd. 177
yokomousa.com

VXR Racing 215
Vxrracing.com

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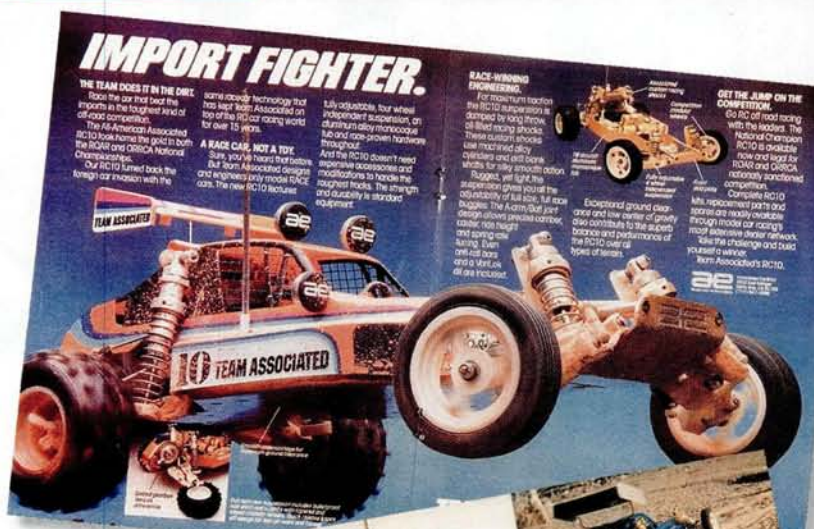
RADIO CONTROL
car action

20 years ago...



It was 20 years ago when the very first issue of *Radio Control Car Action* hit the newsstands. The cover's on-sale date read "Winter '86," but it actually launched in late '85. Back then, the hobby was just starting to flourish. It was growing at an amazing rate, and we were quick to offer readers what was sorely missing at the time—a high-quality magazine that was aimed specifically at helping new drivers. Our first issue covered such subjects as off-road maintenance care, tips on how to properly charge batteries and everything you needed to know about off-road suspension. We had tests on the latest technology, including radios—as well as stories on how to use them properly (amazingly, FM radios weren't even on the horizon yet).

We only wish we still had some of the cars that we tested back then! How'd you like to get your hands on a brand-new Tamiya Bruiser or Hotshot, the original RC10, or even a Kyosho Vanning? And we can't forget that badass Connolly V-8 '32 Ford 1/4-scale car with a real working V-8 engine!



The ultimate off-road R/C vehicle!

Associated Electrics
RC-10



Vanning 4WD
One Wild Nitro Burner!



TUFF STUFF!

BRUISER
MRC-Tamiya Toyota 4x4



GROUND POUNDER

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